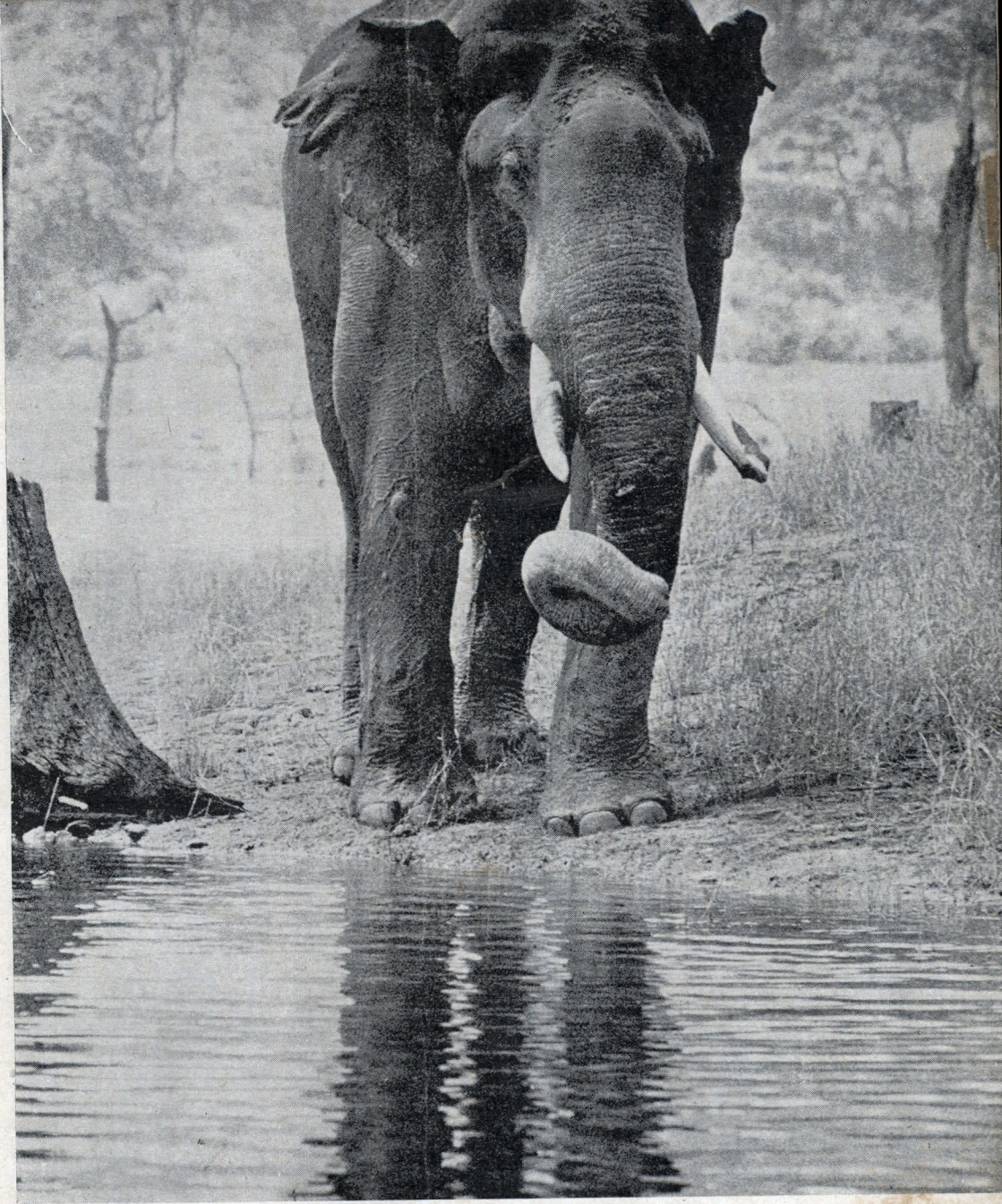




A very old and big lone tusker in Musth—Periyar Sanctuary, Kerala.
Note the bullet wounds on his legs and trunk,

Photo—M. Krishnan.



CHEETAL

JOURNAL OF THE

Wild Life Preservation Society of India

Vol. 7

April 1965

No. 2

Wild Life Preservation Society of India

I. The aims and objects of the Society are as follows :

- (a) To promote interest in and impart knowledge regarding the preservation and conservation of all forms of wild life, particularly among the youth of the country.
- (b) To co-operate with the Govts. of India and States and with other Societies and Institutions having similar aims and objects in working for the interests of wild life.
- (c) To assist in enforcing and actively supporting the Forest Acts, Wild Birds and Animals Protection Acts and Rules etc. of States and the Indian Arms Act and Rules in so far as they pertain to wild life and to bring to the notice of the authorities any infringement of the same and to assist in the detection and prosecution of offenders in respect of such laws.
- (d) To advise and help the Govt. and wild life administrators in the formation, maintenance and protection of Sanctuaries and National Parks, the preservation of wild life in general and rare species of India in particular and in the introduction of exotic species into the country, the rehabilitation of rare species etc. and in the revision on rational lines of the shooting and fishing rules, so as to conserve and increase wild life stocks.
- (e) To raise funds for the carrying out of the above aims and objects and to found and maintain museums, reading rooms and libraries of natural history in order to disseminate knowledge regarding wild life.
- (f) To promote sportsmanship in shikar and to recognise well regulated shooting and fishing, as a means of preserving wild life and fish so that through wise use the surplus may provide a recreational asset to the nation.
- (g) To carry out publicity and propaganda for the preservation of wild life in India by means of monographs, journals, bulletins, films, film strips and other feasible methods.
- (h) To assist members of the Society in obtaining shooting and fishing facilities and facilities for viewing and photographing wild life in India.
- (i) To conduct research into the problem of Wild Life management in India, and in pursuance of this, to initiate, encourage and, where possible, assist in projects for the study of threatened species and related subjects and to provide reference and research facilities for such work.
- (j) To carry on such other activities which will serve the above objectives.

What membership of Wild Life Preservation Society of India will entitle you to ?

1. You will become an active member of the growing number of Wild Life enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of Wild Life for posterity.
2. You will be entitled to the full use of the Library of the Wild Life Preservation Society and of its reading room.
3. You will receive a membership certificate.
4. You will receive a personal Identification and membership card.
5. You will be entitled to buy all publications of the Society at a concession rate.
6. You will be entitled to buy at concession rates the Societys' Greeting Cards, Calenders, Tie and the Balance of Nature Game (Specially published in colour for its educative and recreational value).
7. You will be supplied "Cheetal", the Half Yearly journal of the Society free.

II. The Society has, upto date:— (31-3-65).

Patrons	...	24	Educational members	...	27
Life members	...	79	Professional members	...	33
Ordinary members	...	162	Honorary members	...	9
Institutional members	...	5	Family members	...	1
Affiliate members	...	6	Student members	...	250

III. Executive Committee

President—His Highness Maharaja Pratap Singh
Malvendra of Nabha—Regional
Secretary for North India, Indian
Board of Wild Life.

Senior Executive Vice-President:—Shri S.S. Negi
(Retd. Conservator of Forests)

Vice Presidents:—1. Shri P.D. Stracey—Director
of Forests, Nagaland.

2. Dr. Bains Prashad.
3. Sardar Ranbir Singh.
4. His Highness the Maharaja of Kotah.
5. Shri R.C. Kaushik—Director of Forest
Education, F.R.I. & Colleges, Dehra Dun.

Honorary Secretary & Treasurer:—Dr. R.N. Misra.

Asstt. Hony. Secretary:—Dr. S.K. Sangal.

Wild Life Preservation Society of India

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APRIL, 1965

No. 2

Ourselves

We keep reiterating that our role is that of a catalyst in the cause of conservation; to "swell a progress, start a scene or two". We cannot legislate, nor can we implement legislation. Neither would we consider it our proper function. It is for these very functions that we maintain a rather expensive machinery of legislation and administration in the States and at the Centre. And let there be no vagueness about this. It is we, the common, or garden, men and women of India, who maintain all this paraphernalia of Government and officials. It is we who pay for their salaries, offices, stationery, yes even 'chaprasis' and jeeps and families and livelihood.

This very sobering fact is not merely often, but invariably, almost, forgotten or denied implicitly, by our officials and ministers and 'chaprasis'. The forest department, the B.D.O. misusing his functions in the villages, the 'chaprasi' smoking foul-smelling 'biris' on stools outside offices, would do well to remember this. We say this as our introduction to the present theme: The Wild Life Society for all its virtues and research and advisory activities and functions, cannot accept responsibility for the conservation of wild life and natural resources in India. That is the task for which exist relevant departments. If they do not perform these tasks, they are retrograde and wicked, for that starts the chain of decay in an otherwise well-intentioned administration and sane society.

The causes of the present discontent are sprinkled through the pages of our journal. Crimes committed by officials, illegal shooting, ineffective execution of existing legislation, misconceived and indecisive legislation, official and ministerial cynicism and gross inefficiency, ignorance and worse. But that is not our only function.

On the positive side, despite all the discouragement from these discontents, we are happy to report much progress on several fronts. The Government of India has finally granted a

subsidy for the publication of 'Cheetal', though it has become much reduced in its passage down the length and breadth of august secretarial chambers. The circulation of 'Cheetal' is rising steadily, particularly as a result of our current drive for new members amongst the younger generation, now studying at India's many schools. The Society's research programmes are becoming complex and making slow but positive headway, and recognition is beginning to come in, even if only from outside India.

The Himalayan Wild Life Research Project has been accepted in principle as Project No. 141 of the World Wild Life Fund, though no assistance has yet been forthcoming; both the world fund and a private Trust have held out hopes of early assistance.

The Black Buck and Gazelle Surveys are likely to be completed within this year and we can also look forward to a successful completion of our efforts to acquire a complete study of the Mahaseer, a sporting fish close to the heart of many of our members. Apart from this, 'far back through creeks and inlets', trickles of real work done, and not just planned, are coming in. If the trend continues, we should be able to convert our journal to a quarterly within this year.

To meet a long standing need, to introduce the youth of India to a greater awareness of their wild life heritage, it has been decided to compile a text-book on Indian wild life.

Though the design of the book will be scientific, it will be aimed at the age-group 12 to 20 years and will be profusely illustrated. The language will be simple and the treatment such as to arouse interest without sacrificing the scientific basis.

Eventually, it is hoped to publish translations in all the major languages of India but an original Edition is envisaged simultaneously in English, Hindi and Tamil.

We would welcome the views and advice of our readers and well-wishers on all aspects of this effort.

Our current departure from the older, more staid, format is not really a case of old wine in new bottles; rather, of maturing wine in improving bottles.

We hope our readers will approve of the illustrated cover, as of the new use of bleeding edges to inside illustrations. In future, all issues of 'Cheetal' will carry the best or most significant picture to come to our notice. In this we invite your collaboration, since it is advisable to induct as wide a selection as possible.

Our next departure, and one which it is imperative to make, so as to give 'Cheetal' all the topicality which is essential for living interest, is going to be the conversion to a quarterly publication, instead of every six months.

For this, we need more readers and members, and are enclosing forms and brochures with each copy of 'Cheetal' this time, with a request to you to enroll at least one member so that you may make possible another issue in July, instead of October. We will await the response before embarking on this further improvement, and hope our readers will help.

Editorial Notes

Non-Utilisation of Resources:

We had once before had occasion to remark that the administration of wild life in India will remain chaotic unless the subject could be made 'concurrent' between the States and the Central Government. We reiterate this. With spreading anarchy and a gradual breakdown or grinding-to-a-halt of the States' administrations, this has become only more true.

However, we did make exceptions. The Uttar Pradesh was a model of what even Indian State governments could do. The U.P. forest department was the most efficient and progressive forest organisation in Asia, and even the Wild Life administration in this northern state was making genuine if belated and ineffective efforts at improvement. We went to the extent of recommending to a friend of ours, who happened to be an American with a few thousand dollars which he could have given for wild life work in India, that since his brief restricted him to giving this financial assistance to an official agency, he should make the U.P. Chief Wild Life Warden the recipient of this and convert his department into a Pilot Project. He agreed.

He still has those few thousand dollars, and has not been able to give them away because our much-praised department has not been able to put forward a satisfactory scheme of how this money is to be utilised !

There you have it !!

The next time we meet a rich American across the table or at the bar, and he asks us to suggest recipients for funds which he cannot give to 'privately organised' institutions like ourselves, we shall suggest the Government of Kenya or the Congo !! At least, there they manage their wild life on a basis of sustained yields, and have even managed to get the inter-

national agencies to start a college for the study of wild life ecology and related problems of conservation. In our own country, cursed with our present leadership-crisis, we have not been able to persuade the finest forest institute in Asia to start a course of ecology for our forest trainees ! Who will bell the cat ? Who will teach them ? Our foresters do not know much about this to reconcile themselves to this subject. If only they knew less about serving tea and obsequiousness to our bosses and more about saving wild life !

Variations Upon a Theme:

Wild Life, the nightmare runs, is a State subject under our Constitution. So are forests, education, and in some spheres, food. All are in a mess !

Where do we stand in all this ? We believe in doing our bit, even while sorrowing that we can do no more. So, we argue that we need good, keen, enthusiastic foresters; we argue that we need a department or course of ecological studies at the F.R.I. at Dehra Dun. We contend that we need expert guidance from trained ecologists, even if, as certainly, they have to be imported from America. We claim that not enough is being done to harness our own, and others' talents and enthusiasm.

We deny that there is no organisational machinery to do all these things. We know that all that is needed NOW will be done, but by the time it is done, the needs will have outstripped the actions. So what are we suggesting ?

We are suggesting that the Indian Board of Wild Life should be re-vamped, strengthened and pepped up. We are suggesting that we should eliminate dead-wood from the I.B.W.L. as from every other sphere of our national life. What are we going to do about all this ? Nothing !

No, we will perform our role to the best of our meagre abilities. We are doing it. We intend to place, before it is too late, all the evidence, all the factual and theoretical data we can assemble on the desks of our recalcitrant, nodding official world, in the form of books and brochures and studies, and we will allow truth to drive out error, fact to drive out figments of lazy imaginations. Our choice was whether to undertake species-wise studies or state-wise studies. The former is what will be scientifically correct. The latter practically the best method of helping State departments to institute timely reforms to save their wild life systems.

We do not believe we can do all this before it is too late, but we are going to use the latent, often bitter, but increasingly friendly and mutually helpful and co-operative, rivalry which government departments feel towards us to goad them into saving their wild subjects. For this we are happy to report that we will be publishing a series of studies, some of which will be available to the country's wild-life-administrators by the end of this year onwards.

We hope we have found the one manner of stimulating our official departments to ACTION, NOW.

The other day we noted that the Forest Department of Uttar Pradesh pays the following rewards for the killing of certain wildlife species :

Bear	25 Rs.
Wild dog	25 "
Nilgai	10 "
Otter	10 "
Wild cat	5 "
Pine marten	5 "
Jackal	5 "
Porcupine	10 "

Although the kind of bear is unspecified in the circular issued to the wildlife wardens, presumably the sloth bear is meant. The sloth bear subsists primarily on termites and fruit, suggesting that its food habits are not the cause for the price on its head. Several persons are injured yearly by the sloth bear in unwarranted attacks, but this would not seem to justify an unlimited slaughter of this fine member of the Indian fauna. The pine marten, jackal, and unidentified wild cat are presumably on the list because their food habits are deemed objectionable. Have the food habits of these species been studied by the Forest Department? In other words, have the members of the wildlife staff collected and analyzed hundreds of feces of each species to determine its precise food habits? If not, these certainly should be done before the killing of these animals are condoned on the unproven assumption that they do harm.

The otter eats fish, which we suppose means that the animals take food meant for human consumption. Are otters really abundant enough to justify their killing on that basis? Porcupines kill trees by gnawing off the bark. But will a reward on them induce people to go out and kill them? It has been shown again and again that the paying of a reward on predators and some other types of animals has not the slightest effect on the rate at which the animals are killed. In other words, reward money is a complete and utter waste of funds. If the reward money now paid for the destruction of a wild dog were to be paid to members of the forest staff for apprehending a poacher, far more animals would be saved. The wild dog has not caused the state-wide decline of deer, but man has. We are particularly distressed to see a reward on the nilgai. There is enough poaching in the State by government officials and private citizens without providing a further inducement to go out and slaughter the wildlife. The reward on this fine big game animal is to us incomprehensible.

It is sad to see that a government department which is chronically short of funds for conservation of wildlife has ready money for its extirpation. We would like to suggest that the funds due to be wasted on rewards be immediately employed for the preservation of wildlife. For example, the swamp deer faces extinction in U.P., with the animals in the so-called sanctuaries having almost been poached out of existence. The only place in India where a herd of 500 swamp deer can still be seen is on a private farm land—at Ghola in the Kheri Forest Division. To buy this land and fence it in would seem to us of far greater importance than to fritter away money in the useless persecution of certain animals.

Notes on Mahseer

BY R.D. SINGH

It is felt that to advance the conservation of Mahseer, *Barbus tor*, for sport in Dehra Dun District a society or club of angling enthusiasts should be formed within the fold of the Wild Life Preservation Society of India.

To begin with, it would entitle members to use the services of the Secretary to obtain fishing permits, on payment in advance, and to get advice regarding fishing at various spots where sport is good. This I feel, should be of some benefit to people in Delhi and other places which are within week-end distance of Dehra Dun.

Once there are enough finances with the club, it will really begin to fulfil the objects of its existence; that of 'buying waters' from the panchayats and giving an 'even-break' to the anglers in pursuit of sport. The Wild Life Preservation Society is prepared to give a small grant toward this and it is expected that with enough enthusiasm from the members it would be possible to start this club soon. The membership fee and other details about rules would be decided later. The formation of the club depends upon the response from the readers. Those, who are interested in setting up such a body with its headquarters in Dehra Dun should write to the Hon. Secretary, Wild Life Preservation Society of India, 7 Astley Hall, Dehra Dun, U.P.

The Mahaseer's Greatest Fight

No one who has been fishing regularly in the waters of the Ganges, Jamuna, Song, Tons and the Giri in Dehra Dun District could have helped noticing the speedy deterioration in the conditions for angling in these rivers. The result is that the sport is threatened. The famous *Barbus tor*, the king among fighters, is being exterminated with impunity by every means available. It is mostly because of the sad apathy of our officials and government departments, which do not seem to realize the loss to our natural wealth. A number of times the press has given some space to the subject, but without success. Indian officialdom sleeps on, like a perennial 'KUMBHAKARAN'.

The last two years, however, have been of unusual severity to fish life.

The emergency brought increased activity of the army in and around Rishikesh. Raiwala, which used to be a training camp-site, has become some sort of bafe and an increasing number of army personnel have indulged in reckless bombing of the Song-Ganges junction, and under favourable conditions, the entire length of the Song river upto Kansrao. With the construction of dams and channels on the Tons and Jamuna rivers, the picture there has become even more dismal. The plentiful supply of explosives was fully utilized in providing fresh fish to the colonies of workers and officials that mushroomed in the area.

The results of these depredations have been obvious and 1964 was the bleakest year for fishing, in these waters. Those anglers, whom I met on these areas, would bear me out in this.

The damage to fish life by explosives has been alarming, but there is yet another and more insidious danger, which has been eating away into the fish 'capital' in these rivers.

Over the stretches of water that belong to the panchayats there is large scale netting. These waters are auctioned and since it is a commercial venture every ounce of fish brought out brings profit to the contractors. I have seen large baskets of small mahaseer being sold every morning at Rampur Mandi from October to December and then from March to the end of May. It would be alright if these people used hand-nets, use of which is an art and not so destructive. But the contractors often have a troop of villagers, who organize large-scale stretching of nets and diverting of tributaries to catch fish. Such methods have ruined fishing at Kulhal, the Tons-junction, the Song-junction and the Suswa-junction.

The only means that can save fish life are:—

- (1) In the waters owned by the Forest Department a fool-proof system of watch and ward must be implemented.
- (2) In the Panchayat owned waters complete suspension of netting licences should be enforced.

The first could be done by the Forest and Wild Life Departments while the second is a problem in the jurisdiction of the Civil authorities or the D.M., under whom the Panchayats work.

With effective patrolling and severe penalties for offences, as deterrent, we could once again make these waters live up to their old reputations. There is no need for re-stocking these waters as I am quite sure that, with respite for a year or two, from the depredations of man—by illegal methods—we could once again repopulate these waters. Game and Fisheries management are the latest natural sciences in America and much research is being done in them. Americans are proving successful where the task is doubly difficult, of introducing and re-stocking fish. And! providing fun and sport for 10 million active anglers. We are fortunate that we have a natural wealth of sporting fish. With a little effort now, we can save them for organized sport for a growing number of enthusiasts—still a handful—and even perhaps make it attractive enough for those in America and other countries too. Ours is a task of conservation only.

It is difficult to anticipate the effect on angling on the Tons-Jamuna. There a complex system of dams, channels for hydro-electric schemes is coming-up. But the river Song peacefully flows through, much as it did ages ago, without brick and concrete hindering its passage—a passage which is through beautiful sal forests. From Kansrao to its junction with the Ganges, a distance of some four or five miles, could be a natural sanctuary for mahaseer. If the forest department could manage it, it could be the best possible way, but only if it could give it greater attention than comes in the normal process of their work. If it feels like sharing the burden, then the proposed club should take this stretch for management and protection and when once more abounding in mahseer, for sport.

R.D. Singh

Letter From M. Krishnan

In reply to what you have said about making *Cheetal* more useful and popular, I must say that so far as I know it is the only non-official organ of wildlife preservation in our country, and, as such, the only forum for constructive, and necessarily destructive, criticism of the official wildlife effort. I am 52. I have been passionately interested in our wildlife from childhood, and have watched the animals dwindle and the forests vanish, with an informed and critical appraisal for at least the past 30 years. What can such a man say of the official wildlife effort, which, after all, is the only thing that can really save the animals, since all forests and wastelands in our country are managed by Government—not on behalf of the future generations or even the present one, but arbitrarily and often ignorantly and greedily, with no thought for the future? Men like me (and many of you) who are indifferent to the consequences of honesty, can say this, but who cares? All that I have achieved by way of writing, in spite of my almost unique opportunities for fair comment, is to get myself quietly pushed out of the back door of the I.B.W.L.—so quietly that it was 6 months after the event that I myself knew that I was no longer a member! I cherish the reply I got from the Secretary of that Board when I wrote to ask if what I had heard about my banishment was true: he wrote, "The presumption in paragraph 2 of your letter is correct."

But, while you and I do not mind such things, we cannot afford to forget that it is this same bureaucracy that governs the destinies of wild animals in our country. My dictionary defines the word bureaucracy as "a system of government by officials, responsible only to their departmental chiefs". How wonderfully our Forest Department exemplify the comprehensiveness of this definition in their wildlife "effort"! There is no popular interest in wildlife in our country, not because Indians are unnaturally insensitive to the charms of nature, but because they are preoccupied with their own living, and, more important, because we have no nature literature worth the name in Indian languages, nothing in our schools and homes that can really enliven or inform the natural curiosity of the young in the beasts and birds that share this India that is Bharat with them, not even a narrow patriotic bias in our tastes for trees and flowers. With the possible exception of Australia (which is bitterly regretting the introduction of foreign animals and plants into the country) no country in the world has been so hospitable to exotic (and dangerous) plants as ours. Add to this our incurable population growth, the Five Year Plans and Plan Projects that destroy natural forests more thoroughly than anything else can, and the growing demands of Industry and the villagers on our tree-growth and even shrub-growth, and some idea of the formidableness of our wildlife problems will emerge. I fully realize what a big problem, how complicated and delicate

and difficult, any agency, whether Governmental or not, has to face in any wildlife effort in our country. I also feel proud of the magnificent achievements already to our credit, and realize that Governmental agencies, too, must be given full credit for some truly fine work. But by and large our wildlife effort is under the guidance of Forest Department chiefs and Ministers who neither know nor care for our fauna and flora, and who are almost irresponsible in their shortsighted attitude to the future. They seem to feel that their responsibility by our wildlife is a burden almost, and take the usual bureaucratic steps of setting up their own experts to satisfy, on paper, the discharge of their duty, their embarrassing official duty. How else can anyone explain Madras and Kerala qualifying their Wild Life Officers by sending them to Canada (of all countries!) for a few months? Although I say it as I shouldn't, I am intimately familiar with the fauna and flora of South India, and I can assure any Canadian or American naturalist, however expert in the wildlife of his own region, that it will take him years to begin to fully realize the problems in India confronting Indian animals, in such a totally different physical, political, and cultural climate from that obtaining in his own country. How are we to account for the qualification of our official experts, as experts, in a few months spent in a country with nothing in common with us in climate, flora, or fauna, excepting a few birds?

Please do not think I am being unduly pessimistic, or am at all influenced by personal feelings—if you know me, you would know that my interest in our animals is overwhelmingly superior to my vanity or any hurt to it, or my personal bias. Nor am I saying all this, without a proper realization of my critical responsibilities, because I am writing a letter—you are welcome to publish this, if you like.

Cheetal can, inevitably, reach only a small public. Even if it is read by 50,000 Indians, only some 40 or 50 of them will have enough feeling, and informed feeling, for our wildlife to really appreciate what they read, or to criticize it fairly. But, it is my belief that the entire Governmental machinery for wildlife work cannot boast of a greater number of informed, or even devoted, faunists or naturalists, and it could be that some among those that read the *Cheetal* belong to this limited circle and will welcome fair criticism or comment.

Frankly, I do not think that the *Cheetal* can educate our people in their wildlife responsibilities, or even stimulate public interest widely, at present. But I hope for a near future when every Indian who really cares for our wildlife and who is prepared to offer constructive and useful suggestions will be encouraged by the Government, which now has the monopoly of wildlife management in India, and the *Cheetal* could then find wider scope.

ELECTRICITY COMES TO ELEPHANT COUNTRY

For centuries the area around Masinagudi (Sanderson organised his Kheddas not far from here) has been celebrated for its wild elephants. The encroachments of expanding human colonization and the Moyar Dam on their ancient home have made the elephants here extremely prone to attack human beings.





Photo by M. Krishnan

A MOUSE - DEER DOE

How to Distinguish Age in Partridges

In order to formulate and enforce suitable game laws, it is essential to know the carrying capacity of a certain species at a particular locality and its seasonal variation, if any. In this connection it is equally important to know the relationship of old and young and male and female of that species so that it may be estimated as to what is the productivity of the species and what game bag is expected in an average season and how many shooting permits may be issued to the interested individuals or parties. The ratio of young to old gives a useful rough guide to the extent to which shooting may be allowed without risk of reducing the breeding stock. This is true for the partridges too. A knowledge of sex and age in partridges, as in any other game bird, helps the study and improvement of game management in particular and wild life management in general.

A large number of species of partridges are found in India. The important partridges are:—

1. The Black Partridge or 'Kala Titar' (*Francolinus francolinus*)
2. The Painted Partridge or 'Kala Titar' (*Francolinus pictus*)
3. The Grey Partridge or 'Safed Titar' (*Francolinus pondicerianus*)
4. The Common Hill Partridge or 'Peora' (*Arborophila torqueola*)
5. The Chukor Partridge or 'Chakor' (*Alectoris graeca*).

Other partridges that are found in India are :—

1. The Swamp Partridge or 'Kyah' (*Francolinus gularis*)
2. The See-see Partridge (*Ammoperdix griseogularis*)
3. The Snow Partridge or 'Lerwa' (*Serna lerwa*)
4. The Blyth's Hill Partridge.
5. The Arakan Hill Partridge.
6. The White Cheeked Hill Partridge.
7. The Himalayan Snow Cock or 'Ram-chukor' (*Tetraogallus himalayensis*)

All the above partridges belong to the family Phasianidae of order Gallinae class Aves.

The Black Partridge is chiefly black, spotted and barred with white and fulvous. Its length is about 33 cms. Its iris is brown. The male has characteristic glistening white patches on the cheek, and chestnut coloured collar. The female is considerably paler,

mottled and speckled black and white, with a chestnut patch on the nape. The bill of the male is black and legs are brownish red which become almost orange in the breeding season (mainly April to July). The bill of the female is dusky brown and legs are brownish red. The male weighs from 10 to 20 oz. and female weighs from 8 to 17 oz. The male has a blunt spur (which is little more than a knobby protuberance) on the tarsus. The Black Partridges live singly or in pairs in well watered scrub, tamarisk and tall grass jungle. It haunts in cultivated crops and bush-jungle as well as tea-gardens and their surroundings in outer Himalayas. It is found in northern India (commonly up to 5,000 ft. above mean sea level in the W. Himalayas), east to Mainpur and Assam, the southern limit being the line along Kutch, Gwalior and Chilka lake (Orissa). In India three races of the Black Partridge are found, viz., (i) *F.f. asiae*, which is found throughout northern India; (ii) *F.f. henrici*, which is a comparatively paler bird and is found along the Himalayas to Western Nepal and in the plains to Bihar. In the south it is found upto Gwalior, Sambalpur, and the Chilka lake (Orissa); (iii) *F.f. melanotus*, which is comparatively a much darker race and is found in W. Bengal, Assam and Sikkim.

The Painted Partridge is brownish black, profusely spotted and barred with white in colour, with some ferruginous red in the head and wings. As compared to the Black Partridge, it lacks the black on the head, throat and under parts; the under parts are white with black bars and shaft stripes giving a chequered appearance; there is no chestnut collar in the male; and the female has no chestnut patch on the nape. When it flies away from the observer the blackish under tail coverts visible on either side of the tail and chestnut in wings are diagnostic. Its length, colour of iris, weight and colour of legs; size and position of blunt spur are like that of the Black Partridge. It is found in the Peninsular India south of the range of the distribution of the Black Partridge, and it extends down to about Coimbatore, though it is not found along the Malabar Coast. The Painted Partridges live singly or in pairs in grass, scrub country and cultivation not far from water.

The Grey Partridge is greyish brown in colour with chestnut blotching above and fine wavy and buff vermiculations; chestnut stub-tail and with a distinct gorget line round the rufous throat. Its length is about 30 cm. Its iris is brown. Sexes are alike but the male has a short pointed spur above the hind toe. The bill is dusky plumbeous and the legs are dull red. The weight varies from 11 to 12 oz. The Grey Partridges live in pairs or small coveys except in breeding season (mainly February to June) and are found in every type of country except heavy forest and humid tracts, preferring areas where patches of cultivation are surrounded by sandy waste ground and light scrub jungle. They are not uncommon in hedgrows and thickets on the outskirts of villages. In India the Grey Partridge is found in

the drier portions throughout India (except Assam) extending up to 1,500 ft. above mean sea level in the Himalayas. In India its three races are found, viz.:—

(i) *F.p. mecranensis*, which is a Western race; (ii) *F.p. interpositus*, which extends throughout the whole of N. India to a line in the east through Midnapore and Rajmahal in W. Bengal and south about Ahmednagar and Belgaum, and (iii) The typical race *F.p.p.* which is found south of the range of *F.p. interpositus*.

The common Hill-Partridge is found in the forests throughout the Himalayas and Siwaliks. Its length is about 30 cm. Its colour is olive brown variegated with chestnut and black and with white spots on the flanks. The male has a chestnut crown and a black and white throat enclosed in a white gorget. The female is distinguished from male by its rufous spotted-with-black throat. The common Hill-Partridges live in pairs or in small coveys.

The Chukor is brownish olive to ashy and buff coloured with an ashy-drab stub tail, easily recognised by the black loop on the face and throat and by the beautiful black and chestnut barring of the flanks. Its length is about 38 cm. Its iris is brown, yellowish or orange. Sexes are alike except that the male has a short blunt spur on the hind toe. The bill and legs are red. The male weighs from 19 to 27 oz. and female weighs from 13 to 19 oz. The Chukors generally live in coveys except when actually breeding (April to August). In India only the '*Alectoris gracea chukar*' race is found. It is found in the Himalayas from 1,000 to 15,000 ft. above mean sea level as far east as Nepal.

The Swamp Partridge is found in the Brahmaputra valley and the Himalayan terai east of Pilibhit (U.P.). The See-see Partridge is found in Northern India in the lower Himalayas from Kashmir to Sikkim. The Snow Partridge is found in the higher Himalayas in Punjab and Himachal Pradesh. It is a rare bird and is smallest of the family. The Blyth's Hill Partridge is found in the lower Himalayan ranges. The Arakan Partridge is found in Kachar and Naga hills and the White-Cheeked Hill Partridge is found in Assam. The Himalayan Snow Cock is a big Partridge-like bird found in coveys on the alpine pastures in the Himalayas from 7,000 ft. to 18,000 ft. above mean sea level. It is a rare and extremely shy bird with sexes alike and weighing from 5 to 6 lbs.

Until the partridges are about four months old they are so obviously immature that it is practically not difficult to distinguish a young partridge from the old partridge. After the age of about four months, there is often felt some difficulty in knowing the age of the partridges. Broadly speaking, partridges can be divided into two age-groups, viz., young and old. Those which are more than a year in age are considered old and those which are one year in age or less are considered young. The following tests can be applied to distinguish young partridges from old partridges.

1. **Beak test:**—The lower beak of the partridge is held horizontally between finger and thumb of the hand and the hand is raised so as to allow the beak to support the weight of the bird. The beak of a young partridge will bend but that of an old partridge will support its weight without bending.
2. **Breastbone test:**—The breastbone of the partridge is gently squeezed with the two thumbs in such a way that the fingers of both hands remain across its back. If the partridge is young, the breastbone will 'give' appreciably and if the partridge is old it will be more rigid and noticeably harder and sharper.
3. **Feather test:**—It is a very useful external test. In the young partridges the first and second primary feathers of the wings have a thin white edge on the tip which is absent in old partridges. This test is quite clear except in the case of few old partridges which may retain white edged primary feathers of their first year due to abnormal feather development.
4. **Bursa test:**—It is a very reliable test. In addition to the partridges this test can also be applied to the pheasants and most other game birds. The bursa is a little blind passage on the upper side of the vent. It is probed very gently with a piece of thin wire or preferably a thin match stick and if it goes in more than six millimetres, the partridge is young otherwise it is old. In young partridges the bursa is about 1.3 cm. long but in the old partridges it is practically absent.

R.B. Saxena.

Assistant Conservator of Forests.

It Happened in India

A V.I.O. (Very Important Official) of our acquaintance was seen early one morning walking along a forest road, his car parked some distance away. This was in his own block. He said he was looking for jungle fowl when we shared a smoke with him on our way to our own block.

On the way back, we walked through this tongue of forest along the road, with our dog at heel. Near where the official had been seen, our dog became excited, and was off on a hot scent. He brought us to the remains of a Cheetal, presumably shot by the V.I.O. The legs alone had been removed. This was in January, out of season for Cheetal.

We reported this matter to the Assistant Wild Life Warden. He said he could do nothing as the V.I.O. was V.I. indeed!

(Shades of the Raj.....Ed)

How They Do It Elsewhere

(Extracts from 'Hunting', in the Time Magazine, Nov. 29th, 1963)

There is no shortage of game in the U.S.A., just a superabundance of hunters (15 million this year) and a paucity of places to hunt. Wary farmers post NO TRESPASSING signs; creeping asphalt and urban sprawl gobble up more land each year. What open land remains is often overcrowded. Last week in northern Michigan's Ogemaw County, the deer hunter population was 100 per sq. mi. In the East, it is worth a man's life to venture into the woods. "I don't know which is safer," says one hunter. "Wearing a Day-Glo coat or hanging a pair of antlers on my head". So what does today's hunter do if he wants to bag his game and live to eat it? He heads for a private shooting preserve.

Today there are nearly 2,000 preserves in the U.S., most of them open to anybody with a box of shells and a handful of green-backs. Some are nothing more than dusty, played-out farms, stocked with a few pheasants and partridges. Others cater to the whims of an affluent society.

Most preserves are too small—and too close to big cities—to stock anything but birds. But at Hunter's Haven, 30 miles from Knoxville, Tenn., nimrods can turn a day away from the office into a full-fledged safari. The Haven's 3,500 unfenced acres border on Great Smoky Mountains National Park and team with native game: wild turkeys, bobcats, deer, black bears, ferocious Russian boars that can rip a man open with one slash of their 6" tusks. And that is not all: Owner "Wolfie" Wolfenbarger, a retired Knoxville restaurateur, has stocked the Haven with big-horned aoudad (wild sheep) from North Africa, mouflons from Corsica, elk from Canada, sika deer from Japan and red stags from Bavaria. In two days of casual shooting at the Haven last week, three hunters bagged four wild turkeys (average weight: 22 lbs.), three huge boars, a 425-lb. black bear and two aoudads—one with 29-in. horns. Grinned one of the happy trio: "I feel like the last of the Hapsburgs."

Most preserves bill hunters only for birds and animals actually shot (\$ 3.50 for a pheasant, upto \$600 for a European red stag), so the more killed, the merrier. To accommodate lazy patrons, owners will "rock" pheasants and chukors, tucking their heads under their wings and spinning them around until they are too dizzy to fly properly; some birds are so groggy that hunters have to kick them into the air.

But at preserves like Tennessee's Hunter's Haven, the sport is still the thing. Hunters are warned not to shoot females or small "nontrophy" animals. Baits are never used, and "still hunting" (stalking) is encouraged. When it comes to pulling the trigger—even against a charging boar—the hunter is strictly on his own: guides carry no weapons except skinning knives and shinny up the nearest tree at the first hint of danger. "We'll help you find your animal," says owner Wolfenbarger. "But you have to shoot it yourself".

Comment : (Editor's)

Reading the above makes one wistful for something similar in India—at least to have Preserves where a plentitude of game and controlled shooting can cater for the thousands of potentially trigger-happy young men being turned out by our Rifle-clubs, N.C.C. training etc.

The Nilgiri Wild Life Association

History

This Association which was for a long time known as the Nilgiri Game Association was formed in Ootacamund in 1877 by a band of keen sportsmen. These men fearing that the indiscriminate shooting and fishing that was taking place would exterminate all game and fish in the Nilgiris unless immediate action was taken decided upon and founded the Association and to start with imposed restrictions upon themselves in the form of close seasons, etc. They then urged the Government to bring in legislation aimed at preserving game and fish. Such enthusiasm did not go un-recognised. In 1879 the Government of Madras passed an Act known as the "Nilgiris Game and Fish Preservation Act", the first piece of legislation of its kind in India.

Almost from the start this body was associated with the regulation and management of shooting. In 1926 the running of the rainbow trout fishery which was started at the Association's instance was also entrusted to the care of the Association. The Association had grown to its full stature.

Objects

"The objects of the Association shall be the preservation and management of the existing wild life in the Nilgiris District and the adjoining areas included under Madras Act II of 1879 and the introduction and preservation of other birds, animals and fish."

Construction

The holders of season shooting licences and annual trout fishing licences of the Nilgiris are members of the Association during the currency of their licences. On an average there are 150 members in a year. Besides, there are Honorary Members, most of whom are officials. The Collector of the Nilgiris is the President and the District Forest Officer, Nilgiris Division is the Honorary Secretary. The affairs of the Association are managed by a committee consisting of not more than 24 members assisted by an Honorary Superintendent who is elected from among the members. Thus although the Association is a private body, Government interests are fully protected and there is happy co-operation between officials and non-officials at the district level, which is most essential for successful wild life and fish preservation.

Finances

The money obtained from the sale of shooting and trout fishing licences are made over to the Association by the Government and is the chief source of revenue. Rent from game huts, boat hire charges, profits on sale of maps etc. being the other sources.

Activities

The Association maintains a staff of game and fish watchers for the protection of wild life and fish and generally assists the Forest Department in the enforcement of game and fish preservation laws. This includes prevention of offences and detection thereof when committed. Maintains two Anti-Poaching Gates in the low country to prevent motor car poaching. Pays rewards for the detection of crime.

It advises on the formulation of wild life and fish preservation rules and regulations taking into consideration local conditions.

Runs an Office for the convenience of resident and tourist sportsmen. The office assists in the screening and issue of licences and maintains statistics and records and has a small library. Prepares and sells maps. Issues booklets on fishing and shooting. Publishes a printed report annually. The office acts as a liaison between the Forest, Fisheries, Treasury and Revenue Departments in this sector.

Owns and maintains two game huts and three fishing shelters on the plateau. Plies a boat on the Mukerti Lake.

Conducts census operation whenever necessary. Assists in research.

Maintains a register of professional shikaries and regulates their profession.

Stocks new and under-stocked waters with trout. Improves river conditions and prepares spawning beds.

Rewards are paid for the destruction of vermin.

Institutes prizes in Forest Colleges to promote the study of wild life and wild life preservation consciousness.

Maintains certain tracks and approaches.

Represents wild life and shooting interests on the State Wild Life Board and wild life and fish interests in the local tourist advisory committee.

Most important activity of all is the prevention of poaching through the activities of the Honorary Game Wardens and sportsmen whose mere presence in the jungles and by the rivers and lakes is a deterrent to the poacher.

Generally acting as a watch dog in all matters connected with wild life and fish preservation.

These being some of the more important of the Association's activities.

Problems

Among the many problems faced by the Association the indiscriminate killing of wild life on private lands continues to be the gravest problem.

Next on the list are the arm-chair conservationist and the unrealistic policy of closing of areas to shooting just to placate them.

Disturbed conditions prevailing in the various hydro-electric project areas, population pressures, increasing demands made on forest lands, denudation of forests, disturbance of natural conditions by the planting of blue gum and wattle on a massive scale, introduction of insecticides and pesticides and better transport facilities have not been conducive to the preservation and propagation of wild life. In spite of these handicaps the wild life in the Nilgiris has prospered and in the case of certain species has shown a marked increase. Thanks to the wild life preservation consciousness and sportsmanship roused by the Association.

On the fishing side the Fisheries Department is clamouring to take over the Trout Fishery. Such a move will cripple the Association financially and will not be in the interests of the trout either. The formation of hydro-electric reservoirs, though promising better fishing for a brief period immediately after the formation of each reservoir, ruins the fishery in the long run, the reservoir flooding the spawning grounds in winter during the spawning season and virtually drying up in summer.

Conclusion

The experiments in associating the sporting public in wild life and fish preservation and preservation through well regulated shooting and fishing through the medium of the Association proved to be an immense success as a survey of the wild life and trout position in the Nilgiris as compared to other similar areas in South India would show.

Unless the problems facing the association and wild life and fish preservation are appreciated and timely assistance rendered the future for both is none too bright.

E.R.C. Davidar.

Development Projects and Wild Life Conservation

B. SESHADRI

'To destroy their (wild animals') habitat is as unnecessary as it would be to pull down a great cathedral in order to grow potatoes on the site', wrote Peter Scott, the distinguished naturalist and Chairman of the World Wild Life Fund. Yet, it is precisely this destruction that is proceeding apace in most parts of the world, including India.

A human population explosion, unprecedented as it is inelegant, is unrolling across the globe. There will be twice as many of us before most of us are dead. Yet, and in spite of the red light which is already more than dimly visible through the fog of the future, substantially little has been done by the governments of the world to stave off the impending disaster.

One of the tragic results of this explosion has been to deprive the wild life of the world of their habitats, without which the animals cannot survive. All talk of preserving small herds or specimens of them in zoological parks or minute sanctuary areas is scientifically absurd, as such quarter-hearted measures are incapable of assuring what in fact is proposed that they should do. At the present time, careful studies have shown that nearly one thousand vertebrate animals are in danger of extinction for the reason that the particular habitats they need for continued survival are disappearing through direct human interference. Each of these species is disappearing as fast as its own special kind of habitat is itself disappearing.

For generations, conquest of nature has been accepted, without question, or with questions asked by a very few, as man's particular right. Such acceptance does not of itself make it morally good. Man himself is a part of nature, his surrounding is the whole of the natural scene—the scene which includes earth and water, animals and birds, insects and fishes, plants, weeds and ferns. In the triumph of his conquests over time and space, he has been over-apt to preen himself as a law unto himself, forgetting the while that unless he finds, and finds soon, his rightful place in the natural order of things, he seriously risks his own chances of survival.

The present threat to nature and its wild things has its origin in the rapid increase of human population in the last hundred years and the spread of the present kind of social development. Even the inhospitable Arctic and Antarctic regions are not exempt, and are today invaded on many fronts by government and private enterprises. Equatorial Africa

and India, long regarded as the world's greatest and most interesting wild life areas, are acutely threatened by processes which, unless arrested, will inevitably lead to a total extermination of their wild life populations in the next two or three decades. The great herds of Africa, and, only to a lesser extent, the herds of India, were once the world's truly wonderful sights. Today, they are faced with the stark fact of extinction. Where once their numbers were beyond count, the reckoning now for many threatened species is down to the thousands, and in some cases, to the hundreds or even less.

Much effort has been directed, in the last few years, by a devoted few, to attract world-wide attention and sympathy to these catastrophic conditions in Africa. It has met with a little success, only a little, for in the intervening times, political upheavals drastically reduced the authority of those few and removed many from the scenes of their endeavours. What the future has in store for Africa's princely hosts of wild animals is anybody's guess.

For this tragic state of affairs in Africa, three principal reasons have been given : illegal hunting, inadequate game laws, and superfluous scrub cattle. To these I would have added a fourth : land clearance for settlement. In India, the last, land clearance, coupled with loss of habitats from implementation of development projects, has been primarily responsible to the sudden and drastic diminution in the numbers of its wild life.

The despoliation of nature in the wake of power, irrigation and industrial projects proceeds apace, and significantly, attracts little attention. It is seldom quoted as a prime cause for the extermination of wild animals and birds. Development schemes are launched, often with too little regard for the natural associations which they supplant. 'Man's present behaviour often resembles that of an over-successful parasite which, in killing its host, accomplishes its own death also', wrote Lt-Col. C.L. Boyle, who was Secretary of the Fauna Preservation Society for a long number of years.

A single act of poaching, when it is detected (which is seldom) attracts far more attention than the destruction of vast number of animals through submergence of their habitats by a newly created reservoir or by the elimination of great tracts of forest by land clearance operations for settlement, transportation systems, industrial undertakings, or other reasons. The reason is that the former constitutes a single act of killing without legal sanction to do so, while the latter is undertaken by a lawful agency, the government in the case of a power or irrigation project, a commercial group in the case of an industrial enterprise or a tree-felling programme. Other considerations, generally, are set aside—nature conservation is not even thought of—, and it is only the power, irrigation or industrial target which is dangled before the public eye and makes repeated and variegated appearance in the project report. The despoliation of nature through such human expansion is

seldom cited as a cause for the disappearance of wild life, while poaching is, even by societies devoted to wild life conservation. The perishing of vast numbers of animals in the processes of submergence of great forest areas by a water reservoir or clearing of land for agriculture and settlement does not make news.

It is impossible to resist development in this highly material age, when spiritual and other considerations make little impact on 'developing' society. Even so, scientific knowledge is sufficiently advanced for it to be able to recognise that there are areas very important from the zoological, botanical, historical or scenic points of view where economic considerations may well have to take second place. In other areas of partial or no interest for commercial exploitation, modern methods of wild life conservation could be employed and measures taken to prevent the lesser evil of poaching and to enforce game laws. Yet, even these latter areas are ravaged without thought in exploitation attempts which have no promise of success or which are foredoomed to failure after a few initial years of apparent success, leaving nothing behind them but ugly and useless land scars.

It is essential, therefore, to protect nature from such ill-considered attacks and so ensure that some part at least of the human heritage remains unspoiled. King George VI said poignantly, 'Wild-life today is not ours to dispose of as we please. We hold it in trust and must account for it to those who come after'. But the trouble is wild life is seldom taken into consideration in our environment while planning a power, irrigation, industrial or agricultural project, as it is today in other areas of the world where there is greater enlightenment in this regard. When such consideration is given, deliberation is sure to follow, and a reasonable compromise cannot be difficult to find. 'Compromise' is what is needed in this field of human effort, as in every other, a readiness to look at other points of view. In this, engineers, who have the prime responsibility for the conception, planning and execution of development projects, cannot remain unconcerned with the damage their schemes do to nature. To ensure that this outlook becomes a part of them, a basic appreciation of nature should form a part of their undergraduate curricula. This is not as far-fetched as it may seem at first reading. Nature study is a part of school curricula in many countries of the world, although, sadly, it is not so in this country with a very few exceptions. The suggestion, therefore, is but an extension of what is already recognised as vital to developing minds in forward-looking communities.

Planning of development projects, then, should definitely include conservation of the habitats of wild life. Wild life has a purpose and more uses than the ordinary man is led to believe. It is an integral and indistinguishable part of the forest, and its destruction leads, leaving aside other considerations and thoughts of right and wrong, to an imbalance

which has serious repercussions on human life. Numerous instances of such reactions can be given, although the planners of the projects would not admit to them, or indeed will not be held blameworthy by the public at large. Destruction of insectivorous birds through destruction of trees, for example, leads immediately to a great increase in the pests of agricultural crops, locusts for instance. Killing of deer and wild pig, which form the primary diet of tigers in our jungles, through clearance of plains forests, make the tigers cattle-lifters, and the blame is laid wholly and squarely on the tigers.

Planning to include conservation of forest and vegetational blocks will necessarily involve long-term policies like forestry operations, which will not pay dividends within a generation, and for that reason goes by default. *A conservation programme will always seem unpopular, and therefore needs courage to propose and to execute.*

Human life and wild life are closely joined together in a cause-and-effect relationship, a natural law in which one event is a cause of the next which becomes its effect. Man has signally failed to appreciate that animals, birds, and other living forms, have their parts to play in developing and preserving the natural resources of this earth. He has consistently shut his eye to his obligation to future generations. How else can one explain the threat to the blue whale, of which man has killed so many that the species, the largest animal alive and the largest that has ever been as far as is known, is on the verge of extinction. In spite of an international convention, he cannot, even now agree to give full protection to it, and has even attempted a threat to alter its seemingly unalterable habitat, the ocean.

Instances of primordial mountain and forest tracts being despoiled by development projects are legion, in this country and elsewhere. An outstanding example of exploitation and despoliation of a magnificent area for private gain was the damming of Hetch Hetchy valley in the Yosemite National Park in the United States to provide water supply for San Francisco city. This was an area of great mountain beauty with groves of giant sequoias and favoured by many species of wild life. The event occurred before the establishment of the National Park Service in the United States (which has done such magnificent service since in the preservation of outstanding scenic, scientific, historic and prehistoric areas of importance), and during a period in U.S. history when exploitation rather than conservation represented the general outlook.

In India, vast areas submerged by water reservoirs or to be submerged by them or otherwise exterminated by land clearing operations would make a long and woesome list, and include such well-known place names as Dandakaranya, the Kakkankote bamboo jungles, the Terai jungles, Bhaisalotan, and many others.. I will also refer to an area with which I am rather familiar. In Bengal, the extinguishment of wild life everywhere has

followed the extension of cultivation and despoliation of forest and vegetational blocks by development projects, which in turn followed in the wake of the rapid increase of the population. In the North Bengal districts, this process has been accelerated by the laying of railways and roadways and by the establishment of army camps, which besides destroying the animals' natural habitats almost eliminated migration from Nepal and Bhutan. Forest clearance in the central districts to find land for refugees after the partition wiped out wild life almost entirely in that area. In the extreme south of Bengal, in the historic Sunderbans forest tracts, reclamation and forestry projects threaten to put an end to whatever wild life there is left in what must be reckoned one of the world's unique wilderness areas, an extraordinary creation over thousands of years of geological and climatic changes.

Water developments are, in this country, the prime consumers of forest and vegetational areas and disturbers of wild life habitats. There are many factors involved in such developments that are of vital consequence to fish and wild life that these need emphasis right at the stage a scheme is conceived and planning begun. In every scheme of water resource development, every feasible provision designed to minimise damage to fish and wild life and increase their chances of survival should be incorporated. Wild life habitats are of national, and sometimes international, significance, and cannot be lightly exterminated.

In the water developments, recreational use—I use this term in all the fullness of its connotation—should be considered along with other uses such as irrigation, power, water supply, and so on. In some cases, the recreational value of the rivers, streams or lakes may be such as to make it their most important use. There are instances in this country where the raising of water behind dams has submerged areas of great scenic, scientific or archaeological value. In such cases, in the future at least, it must be decided whether a reservoir in that location is more or less important than the preservation of the existing features. *Decision should not always be made on the technical front, as now, but upon broader considerations of public interest.*

Water developments involve watershed protection. This, if effectively carried out, in itself assures part protection to the habitats of wild life. The requirements of watershed protection are as yet but insufficiently known. There is much need for research to find methods of forest and grazing land use practices which will permit the best economic use of the land resources without adversely affecting the stream flow. Watershed protection to prevent or minimise destructive floods and sedimentation is an essential requirement for the continued usefulness of irrigation schemes as well as for the maintenance of the essential resources of the watershed lands. Most of the run-off in a basin is derived from mountainous or forested lands, but some also occurs on less well-covered foothill lands. Many of these lands are highly susceptible to accelerated erosion when the plant cover and soil mantle are

disturbed. This destructive process not only reduces the productivity and usefulness of the land itself, but also contributes excessive quantities of sediment to the streams which eventually become lodged in reservoirs and water courses reducing their effective life. Irrigation schemes being dependent upon the storage and diversion of flowing mountain rivers and streams, the hazard of sedimentation will be always present. Watershed lands must be used for forestry and grazing, and are often the basis of subsistence for wild life, and their deterioration can be held in check only through proper watershed management.

Besides, our extant forests are priceless remnants of the former primeval forests of India. They must be held as representative remains of the great forests of the past, and their protection is a responsibility of the first importance. The forests not only enhance the scenic grandeur of an area and provide natural habitats for wild life, but they are also important in the protection of watersheds and in the regulation of stream flow.

In any coordinated water resources development, appropriate recognition should be given, at every stage, to the assets of fish and wild life resources. The importance of these assets requires that a detailed survey of the project areas is made, and areas and refuges established where their location, physical features and the project operation will serve to promote the development of habitat. Where conditions lend themselves to such development, every possible effort must be made to operate the reservoirs with full consideration of the wild life resources. For example, the minimum drawdown should be limited to an elevation that would provide a sufficient depth and area to sustain wild life. Or, if the reservoir operation requires maximum drawdown as would cause detriment to the wild life or its habitat, consideration should be given to construction of underwater or retaining dikes or upstream development to preserve aquatic food plants for water birds. Reservoir outlet facilities should be so constructed as to release water from as close to the bottom of the reservoir as practicable.

Analysis and evaluation of recreational benefits, if made, may show that the benefits inherent in them will be worth much in terms of rupee value. Recreational values or benefits are, in general, nonvendible, something upon which a monetary scale cannot be used. From experience and knowledge obtained from other areas, and observation, however, certain appraisals can be made.

Considerations of fishery resources are conspicuously absent from our water resources development schemes. Their full value is, again, difficult to resolve in monetary terms. Analogous to the gross return to the farmer as a result of irrigation benefits, a measurement may be made of the gross receipts to the fisherman. But there are many indirect benefits besides. Processing, transporting and marketing create these benefits. The value of sport,

hardly yet recognised in this country and yet of inestimable value to city-weary nerves, is even more difficult to appraise because of its intangible benefits, and consequently very liable to be brushed aside under conditions of present-day thinking.

Certain facts are of fundamental importance to an understanding of problems facing fishery resources. These include fish biology, the changes that have taken or are taking place in the breeding areas, and the causes for depletion. The most obvious way in which the water use development affects the movements of migratory fish is by the construction of dams that present a complete barrier to movement. Another effect of a dam may be to raise the water temperature in the main river above the tolerance of fish. Pollution may present a barrier to movement or utterly destroy the value of a stream for breeding. Size of streams below the dam or diversions may reduce the breeding and rearing areas, and their inadequate flows may present critical problems to fish survival.

Reservoirs should also be used to create more water area available for water birds. Reclamation of marsh lands have been attempted such as in the Salt Lakes area near Calcutta without giving the slightest consideration to what might become of the birds whose resting and breeding areas they used to be. Bharatpur is a good case in point. In its marshes at Keoladeo Ghana, duck, geese, and other water birds used to breed in fantastic numbers, and despite the heavy slaughter by Princely shooting in the winter months, their numbers were not depleted. But in the post-Princely years, there arose a grave danger of their extermination through a reluctance of the local irrigation works to let in enough water into the marshes, which are dependent on that water for survival as a home for the birds. It was only through the untiring efforts of a few naturalists that the situation was saved. The sanctuary contains to be in being, a place of delight.

I will conclude by a reference to what has been achieved in a giant multipurpose water resources scheme in the United States in the way of nature and wild life conservation—the Columbia river basin scheme. All this was possible because full and reasonable consideration was given in the planning stage, as will become evident from a study of their reports prepared at that stage. In the upper basin of the Snake river, a tributary of the Columbia river, the unusual numbers of wild life and fish which live there today owe their existence to the importance given to nature conservation. Today, they not only offer delectation to the citizen, but have led to economic benefits to the basin. Trout, perch and bass inhabit the lakes and streams, and trout numbers are augmented each year by stocking with fingerlings from hatcheries.

Three park areas, Yellowstone, Grand Teton, and Teton National Forest, with the National Elk Refuge to augment, account primarily for the big wild animal population in

the north-east of the basin. More than ten thousand elk winter annually on the elk refuge and nearby forest ranges. Mule deer and black bear are numerous. Waterfowl and game birds abound. The National Red Rock Lakes Refuge primarily affords protection to the rare trumpeter swan, largest of the North American migratory birds. National wildlife refuges and other game refuges are important conservation areas which afford nesting areas to waterfowl, which make use of the storage reservoirs to nest and raise their young. But the waters of Yellowstone have frequently been the targets of irrigation and power project proponents. Yellowstone is one of the world's greatest wild life sanctuaries and the world's greatest geyser area of spectacular natural beauty. Repeated attempts to dam Yellowstone Lake were defeated, as were proposals directed at the use of other scenic lakes. A 1938 project to dam Yellowstone Lake for commercial irrigation, which involved construction of a dam and tunnel within the Park, brought such world-wide protest that it was defeated.

Similarly, the middle basin of the Snake river has wild life of great variety, salmon runs being included in this region. Earlier developments had proceeded without proper cognizance of the significance of salmon runs, and certain waters got blocked for salmon through siltation and reduced flows and were nearly eliminated of the fish. One variety of salmon became extinct as a result of dam construction. The salmon industry is of great importance to the economics of the region, and it was only through timely and sensible action that a catastrophe was avoided. There are elk, mule deer, bighorn sheep, mountain goat, and fur-bearing animals such as the beaver, lynx, coyote, fox, muskrat, mink, marten and others, which are an important source of income to farmers and professional trappers. There is an abundance of waterfowl which make the area one of the best for their hunting. National wildlife refuges provide areas where waterfowl rest unmolested, two of these actually using storage reservoirs. The Deer Flat Reservoir offers a resting place for over a million waterfowl annually.

The middle Columbia river basin is also a very important fish and wild life area, providing ideal habitat for both. This received the most careful consideration in the planning of the project. Irrigation diversions, dredging of canals, and placer mining for gold had led to marked depletions and even complete disappearance of salmon and steelhead in many waters. But with thought given to fish preservation and culture, many streams have been improved for salmon, and trout is also abundant. Elk, mule deer and black bear constitute the larger wildlife, and smaller mammals as the bear, coyote, fox, marten, mink and muskrat are numerous. More than thirty specimens of waterfowl live in the basin or make use of it, and three wildlife refuges and a number of game refuges are maintained.

Lower Columbia holds lesser numbers of fish and wild life as a result of settlement and development, but the resources are still substantial. Salmon had got blocked by power dams and barriers on small streams, and industrial pollution was a detrimental factor. But as part of the project improvement, fish and game birds were introduced, and today this area provides spawning areas of utmost importance for salmon. Later dam constructions were equipped with adequate fishways. Black-tailed deer are numerous, and there are some elk and black bear. Fur-bearers such as beaver, coyote, fox, otter, muskrat and mink provide substantial income to farmers and trappers.

Therefore, wild life conservation by conservation of its habitat is not inconsistent with development and exploitation of water and other natural resources. It is merely that the objective of nature conservation should be kept prominently in view at stages of the planning. In the United States—which too went through decades of senseless slaughter of its wild animals and wild birds—the establishment of a Fish and Wildlife Service and a National Park Service heralded the permanent recognition given by the government of that country to the problems of wild life and nature conservation. A few words on the functions they perform would not be out of place.

The Fish and Wildlife Service has for its objectives the restoration and conservation of the resources of native fish, bird and animal life of the United States and its coastal waters in the interest of the nation. Numerous programmes are conducted to those ends: research in wild life distribution, migrations, classifications, food habits, diseases, etc.; fishery biology studies of fish populations, of means to increase their production and improve their quality, and of means to protect them in connection with stream developments for irrigation, power and other purposes. The Service also establishes and maintains national wild life refuges, administers Federal statutes for the protection and conservation of migratory fish, birds and game; makes studies for improvement of fishery methods, and propagates food and game fishes.

The National Park Service seeks to preserve outstanding scenic, scientific, historic and prehistoric areas of national importance and administers them for the benefit and enjoyment of the people, in such manner and by such means as will leave areas unimpaired for the enjoyment of future generations. Through Congressional authorisation the Service also co-operates with other Federal agencies and with State agencies in co-ordinated recreation land planning. Collectively, the national parks provide economic values which contribute directly to the welfare of the region and of the nation. They hold examples of scenic, geologic, botanic and zoologic interests where the natural forces of the earth continue undisturbed and can be studied. They present great opportunities for activities such as camping, mountain



CHINKARA OR BLACKBUCK

Photo : K.S. Dhasmakumar Sinhji of Bhavnagar.

'Dilbahar', the residence of R. S. Dhasmakumar Sinhji, Member of the Indian Board of Wild Life and an eminent conservationist and naturalist in his own right, has been the scene of an interesting experiment recently.

A hypsid between *Gazalla benetti* and *Antelope cervicapra*, between the Gazelle and the Black-buck, has been produced after much effort in the Bhavnagar enclosure.

Normally, hybridization leads to larger sizes, as even this photograph seems to indicate.

—Ed.



Pintail and bluewinged teal : Tada backwaters in Andhra, some 40 miles from Madras. Many water-birds, including flamingos, pelicans, grey herons, spoonbills and egrets, and many duck, come here in winter.

Photo by M. Krishnan.

climbing and other sports. Primitive conditions of cover, transportation and habitation are maintained as far as possible without disturbance, and they are protective zones for fish and wild life.

There is no reason why similar Services should not be established in a vast country like India in order to ensure a safeguard to nature despoliation. Legislative action could be taken if the need for conservation is recognised. Such recognition will be a truly civilised action in the dog-eat-dog environment of the daily struggle.

Population and economic growth will entail continued encroachment upon wild life habitats. These habitats will be altered by increasingly intensive use of wilderness areas by man, and this alteration of habitats will in turn result in further wild life losses. The value of wild life resources should, therefore, be emphasised in the planning of all development projects which are likely to interfere with wild life habitats. Extended management programmes will also be necessary to preserve and maintain wild life resources, which are one of the nation's priceless and irreplaceable assets. But the assets are of a kind that do not lend themselves readily to assessments in terms of food or money.

Apart from State-sponsored development projects which are the greatest destroyers in this country of wild life habitats through their attacks on mountainous and riverine areas for power and irrigation development, private interests also make constantly recurring demands for the use of forest features for their own gain, and to the loss of the people who are the real owners of those areas and are entitled to enjoy them. Forest cutting and clearance afford a temporary prop to declining interests or a means of quick gain to private investors, and irreparably rob the beauty of the areas and kill off the wild life. Also, exploitation for minerals and use of grazing areas in the forests deficient in grazing both constitute threats to wild life. Many of these resources are often available elsewhere, although possibly at greater cost to the State or the proponents of the projects. But because wild life is given no consideration in the planning, the projects are implemented leaving a terrible wake of destruction of wild life and its habitats.

From the States:

Kerala: With the Moyar Dam nearing completion, another nail is struck in the coffin of Indian wild life. Please see M. Krishnan's and B. Seshadri's remarks in this context.

Madras: Mr. M. Krishnan, the naturalist from the south, or should we call him the Naturalist of the South, is soon to hold a one-man exhibition of his wild life photographs. This exhibit is to be sponsored by the Kodak organisation. It is an omen of vital significance to Indian wild life in the context of what private individuals' efforts can do.

Orissa: This tribal state continues to be our favourite, as well our *bete noire*! With food becoming scarcer with each year of the present regime, the tribals cannot be blamed for having, instead of the annual 'battue', several 'battues' for meat-game all the days when their fields do not call them. We give at the most two years more for the extinction of most of the non-carnivorous wild life of the inhabited parts of Orissa.

Assam: Troop activity in the border areas and the Naga Hills is continually shrinking the wilderness areas' wild life populations. Particularly in the hills is this very striking, as the 'thakin' and the 'serow' are not likely to survive much more.

Bhutan: News from this border nation whose relationship with India is somewhat ambivalent in that its defence and foreign affairs are governed by treaty rights with India, is necessarily vague and second-hand. One of our members who has paid several visits to Bhutan told us the Sikkim Stag, or 'shou', still survived in Central Bhutan. Now, another of our members, in conversations with the Maharaja of Bhutan, seems to have gathered the impression that the 'shou' is finally extinct.

As we often say, we do not need 'impressions'. We need facts. And these we can get only through personal studies and visits. It is to be hoped that improved finances may permit the Himalayan Research Project to include a survey on this rare animal.

Mr. Barry Bishop, of the National Geographic Magazine, and one of the American climbers to reach the summit of Everest, has been approached with this end in view to include wild life work in his proposed High Elevation scientific expedition to Sikkim in the autumn of this year.

Uttar Pradesh: Shooting Block reservation and extra-gun charges have been raised to a somewhat extravagant extent. This will inevitably mean more poaching. To expect an

honest legitimate sportsman of moderate means in a democratic, socialistic society to pay exorbitant fees is unfair and irrational, even though we welcome the fact that non-Indian sportsmen will be charged even higher fees, as they can better afford to pay them.

The condition of the Corbett Park in Kalagarh Forest Division is causing anxiety. There seems to have been a recent run of derelictions due to the Ramganga Dam Project. A qualified wild life ecologist recently informed us that the Kanha National Park stands out much better, in so far as tigers go, as they are much more confiding and though poaching is rampant in the Kanha Park in M. P., it is less obvious in its consequences on carnivorous species.

Rajasthan : Bharatpur, the Keoladeo Ghana was the scene of as unhealthy an example of official cynicism as we have ever come across.

A visiting dignitary, President of a European country, was invited by an official of the External Affairs Ministry from New Delhi to shoot a Cheetal stag in velvet. He fired a shot from his Rolls Royce and wounded the stag. No effort was made to follow the wounded animal. Then, another official of the entourage fired at and wounded a Blue Bull. Again, the wounded animal was left untracked. Then, a third shot was fired at another Blue Bull, and the animal was collected.

All this happened inside the Sanctuary ! We are astonished. We were conducting a game census with a qualified wild life ecologist there and could not believe our eyes. We realise we must maintain good relations with helpful countries, but not at the cost of legality. And we are sure no European national could have been unaware of the grossness of the crime. It is the glorified clerical officials of our External Affairs Ministry, who are to blame. This is not diplomacy, Mr. Diplomat. This is disgusting treachery.

Correspondence

Sir,

I have read with great interest the article by Mr. M. J. S. Mackenzie, "For The Wild-fowler I", which appeared in the April, 1964 edition of your journal, and feel that the criticism by Humayan Abdulali, made in the October issue, would appear to have been made without a comprehensive knowledge of the subject.

Firstly all the sub-species of Spotbill as described in the article, and known to me, have a yellow tip to the bill, whereas only the Indian Spotbill (*Anas poecilorhyncha poecilorhyncha*) has the red markings at the base of the bill. Therefore, it is more likely that the name Spotbill is derived from this yellow tip, common to all three, rather than the red base.

Secondly, there is not to my knowledge any incidence of the Grey Duck (*Anas superciliosa superciliosa*) in Assam, and were I to find a Grey Duck it would not have a yellow tip to its bill. Further a Grey Duck has light brown feet and a Spotbill bright orange. I infer by this that all three birds covered in Mr. Mackenzie's article are indeed Spotbill and as such a species distinctly apart from the Grey Duck.

Thirdly, there can be no mistake over immature birds as the Chinese Spotbill (*Anas poecilorhyncha zonorhyncha*) has a dark line from the base of the bill to the ear, and a purple-blue speculum as opposed to the green speculum of the Indian (*Anas poecilorhyncha poecilorhyncha*) and the Burmese Spotbill (*Anas poecilorhyncha harringtoni*). An error might be possible between the Indian and Burmese birds as the two speculums are similar but there is no dark facial line. From my own observations in the field I find that the Chinese Spotbill is also definitely recognisable in flight as it has a very much darker underside and is in fact of a noticeably darker appearance overall. Specifically the birds cannot be confused with the Grey Duck under any circumstances

I would like to add here that my own field records from October, 1962 up to the present time indicate that I have been able to positively identify *zonorhyncha* on eleven occasions other than when in flight. Finally I am not of the opinion that the article in question has misinformed any of your readers.

Yours etc.

(Sd.) R. W. Scott

Daisajan Tea Estate,

P.O. Talap, Upper Assam.

5th January, 1965

Sir,

The Wild Life Warden's department of Uttar Pradesh has a system of what is called "compensation" whereby shikaris and poachers either caught in the act of illegal shooting or in the incriminating possession of illegitimately shot game, are made to pay large sums of money to reach an amicable settlement outside court.

I wonder if you can tell me something about the legal position in regard to this novel system.

In the month of November last year, a party of "shikaris" from the Bengal Sappers Group at Roorkee shot a Cheetal hind and were caught on the road at night while bringing it back to the bungalow. They paid the "compensation" of Rupees five hundred, and now I gather they have been black-listed also. Is this legally permissible, or does the black-listing amount to a dual punishment not permissible under law?

Yours etc.
Inquisitive,
New Delhi.

(We will try to find out the legal position in this regard, but our personal opinion is that whatever the punishment given to these "shikaris", it cannot be sufficient for their crime.

—Ed.)

* * * *

Sir,

I would like to suggest that the Wild Life Society of India deal with the wild life stocks of each State of the Union in turn, and produce a book on each. This way, you will place before the respective departments incontrovertible evidence which they cannot ignore. This would also fan the flames of inter-State rivalry, a very strong factor on the Indian scene to-day.

Yours etc.
Lakshman Singh,
Vishkhapatnam, A. P.

* * * *

Sir,

The Black Buck was the subject of an excellent article in the October, 1964 issue of 'Cheetal'. While congratulating Mr. Dang, I must point out to him and to your readers

that he has devoted hardly any attention to the causes that have led to the decimation of this noble antelope in India.

The blame must squarely rest upon the Coprs. Diplomatique stationed in New Delhi. Our truckers, contractors and nouveau riches 'sportsmen' are also to blame, but it is the diplomat's jeep and telescopic rifle that have finished the large herds of Antelope cervicapra from our fields and plains.

That same forest department, of the Punjab, which bullies and persecutes the few legitimate Indian sportsmen who return from duck shooting on Sundays to Delhi with a few birds, just because they might have, for example, shot a 'Nukta' in error, turn all sugar and hypocrisy to the diplomats and foreign nationals who bring back, even to-day, black buck and does from their shoots. Their excuse is that they cannot stop CD cars. Phoeey ! There must be a way out of such minor legal wrangles for the compatriots of Kairon !!

Yours etc.

K. R. P. Rao,
New Delhi.

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Sir,

I was very interested to read Mr. Hari Dang's article on the Black Buck in your last issue. I would like to bring to your notice something which happened in Delhi last week.

A certain member of the Consular Corps, from Europe, was killed in a car-crash, in which one of his sons, too, died. We were all very sorry to hear of this tragic accident, specially as this gentleman was a keen 'sportsman' and had even once been mauled by a tiger.

However, it transpires that in the car at that time there was a Black Buck, unwarrantably and illegally shot. Nothing was done about this, even though it is known widely that he had shot it from Babugarh farm, where the army studs are kept and reared. Babugarh is probably the last place near Delhi where Black Buck can still be seen in numbers, and something should be done to protect them, specially from such non-Indians who enjoy diplomatic or consular privileges.

In this case Divine Justice was done : but what do we pay our wild life staff for, if we must trust to Divine Justice ?

Yours etc.

Major S. K. Lall,
New Delhi.

Sir,

I was at Corbett Park last year when a certain American from Kabul, I believe his name was Garber, shot two tigers supposedly in Mandal shooting block. I met one of the game guards in Dhikala who had come down from the Forest Rest House at Mandal. He said the tigers were shot inside the Park boundary. Why cannot the Wild Life Department do something to catch this person ?

Yours etc.

Sinclair P. Townsend,
Chanakya Puri, New Delhi.

(Note : We have it on good sources that Mr. D. N. Misra, the Chief Wild Life Warden of U.P. is working on this case actively. We wish him luck in bringing the offender to book.—Ed.)

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c/o FAIZ & CO.,
75, Abdul Rehman Street,
Bombay-3.
26th September, 1964.

The Secretary,
Indian Board for Wild Life,
New Delhi.

Dear Sir,

The Loris, a Journal of Ceylon Wild Life, Vol. IX, No. 6, for December 1963, contains an article by Patsy Norris on 'A Trip to the Corbett National Park'. The following remarks on page 348 may be of interest to you:—

"From what we have seen of the Corbett National Park, it would appear that our own Parks here in Ceylon are far ahead of those in India in every way. The animals in the Corbett Park were very shy and were off at the slightest provocation when they saw a vehicle; a lot of this could be due to the fact that visitors appeared to drive round the track at fast speeds. A tracker is not allotted to each party or vehicle such as they are with us, consequently visitors, who possibly know very little about wild life, can speed with their cars, get out and stroll around, in a lot of cases dressed in bright colours, talk loudly, and in general scare off any animals that are likely to be around. Also the Forestry lorries are

speeding backwards and forwards, as there is timber felling in the Park itself, a practice which on no account should be allowed. So it is not to be wondered at that in most cases the animals are very, very shy indeed.

The potentialities of the Park are very great and with knowledge and careful administration, it could be made into an exceptionally fine National Park and one of which India could be justly proud. At the moment wild life comes under the Forestry Department such as was the case with us in Ceylon up to 1948, and which is an unsatisfactory state of affairs, for the running of wild life should, and can only, be well run under a department of its own".

Yours faithfully,
Sd./- Humayun Abdulali.

* * * *

cc:

The Chairman, I.B.W.L., New Delhi.

The Vice-Chairman, I.B.W.L., New Delhi.

The Hon. Secretary, Bombay Natural History Society, Bombay.

Sir,

Indian wild life represents an unrecognized national asset. The forests supply the States rupee revenue, but the animal species are an untapped foreign exchange resource. Tourism is a major industry of Kenya largely because of its wild life. A similar potential exists here—but not for much longer. Several Indian animal species, including the black buck and chinkara, are in danger of virtually immediate extinction. Poaching, coupled with lack of sound game management and conservation policies, threaten the swamp deer, the Kashmir stag and other animals unique to India. The absence of reliable game census information masks further the undoubtedly urgent dimensions of this problem.

Unlike irrigation schemes or power plants which can be postponed, the preservation of animal life will not wait. Once the Gir lion or the snow leopard is extinct, it cannot be manufactured anew. It is gone for all time to come: no skilled technician can recreate it, and the entire world is the poorer. Growing population pressure represents a challenge, but not an expensive or insurmountable one, to preservation of wild life. Other countries face similar population increases, yet their game management and conservation policies have brought about sustained and, in some cases, larger numbers of wild life. Additionally in some places hunting is better than ever before; the increased licence revenue supports the continued use of modern management techniques. This could be so in India.

The Central Government should institute an immediate census of the wild life species of India. Technical expertise could be obtained from abroad through Government aid programmes. The State Governments should provide their proper share of the local costs. This survey should be followed by Central Government recognition of the national character of wild life. Tourist development funds should be offered to help the States initiate modern management and conservation programmes. The forestry institute at Dehra Dun should provide special training in this field. Exchange programmes are the logical vehicle to meet immediate personnel needs while advanced Indian skills are developed abroad.

In terms of potential foreign exchange revenue, the Central and State rupee outlay to undertake such programmes is minimal. In terms of Indian responsibility to preserve wild life species as a world asset, the costs are negligible. At presumed current rates of depletion, some species will reach the point of no return within the next two years. Can India afford to ignore this situation for much longer?

New Delhi

Yours etc.,

J. G.

OF CATS AND WOMAN

"Once in a moment of great generosity

God has shown to me

A leopard running free.

How, from that moment, could he expect of me,

Born without his tolerance, calmly to see

All those women, those bloody awful women,

Dressed up in leopard skins and

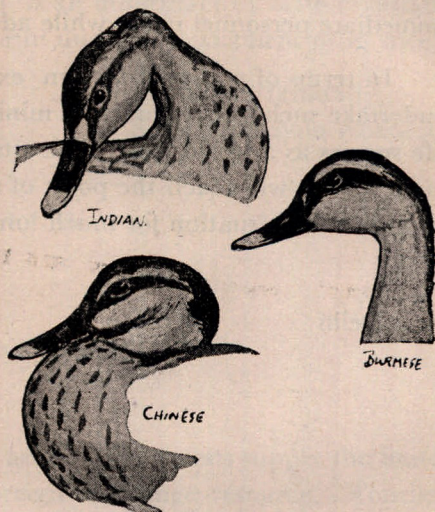
Sitting down to tea?"

—Vernon Bartlett.

For the Wildfowler—II

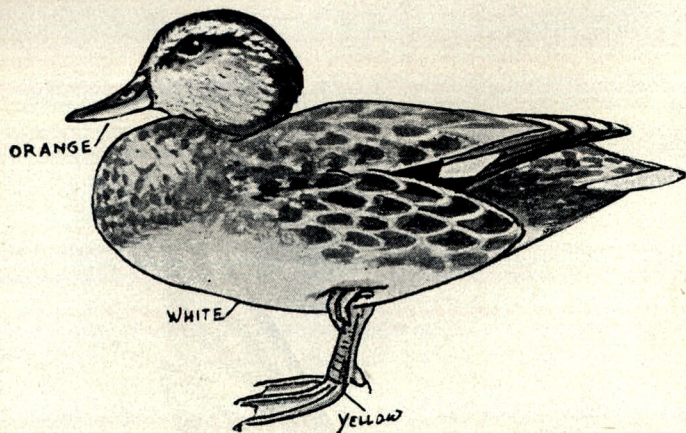
Firstly, although I do not want to become engaged in a battle of opinions, I feel that I must comment on Mr. Humayun Abdulali's remarkable letter (published on page 60 of the October, 1964 Cheetal), as he may well have confused some readers.

The name Spotbill may or may not have arisen as stated but I quote Delacour (1960) "A group of three forms of rather massive Mallards which live in Asia have been placed here in the species *poecilerhyncha*. The sexes are generally similar and they are characterised by a buffy grey and blackish plumage, white patches on the wing (tertiaries) and a large yellow spot on the tip of a black bill; feet orange... etc. Grey Duck (*Anas superciliosa*) on the other hand are from "the islands of the South Pacific" and are "closely related to the Spotbills but lack the yellow spot at the tip of the culmen." This group also has three forms or sub-species.

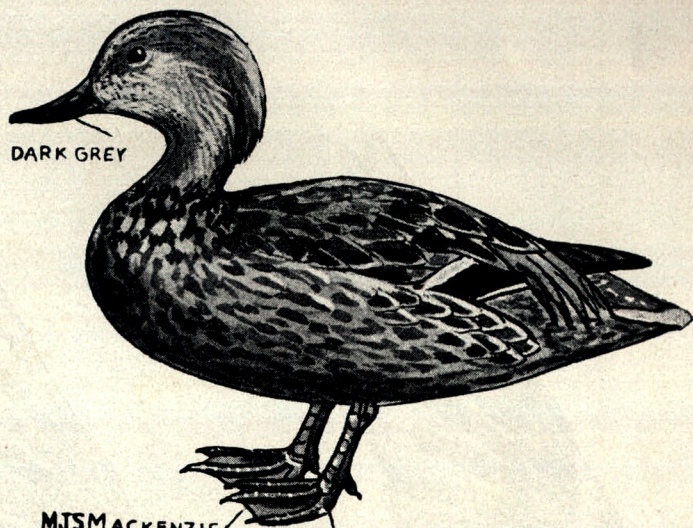


The "diagnostic" characteristics I described are, I believe, quite reasonable. The Indian and Burmese birds are not easy to differentiate in the field but the Chinese bird is quite unmistakable if observed under reasonable conditions. As to its rarity I am afraid that Mr. Humayun Abdulali is badly mis-informed, in Northern Assam it is not unusual to find this species in the bag at the end of the day. I shot four on the 28th December, 1964, and Mr. P.A. Naug one more on the same morning. The wing and head marking are so distinct that it is impossible to mistake them in the hand. Young Indian Spotbill do not have a purple-blue speculum, neither do they have the dark line from the ear to the base of the bill.

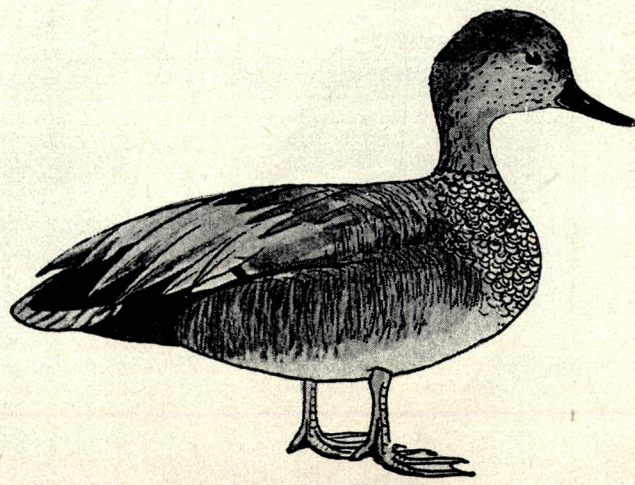
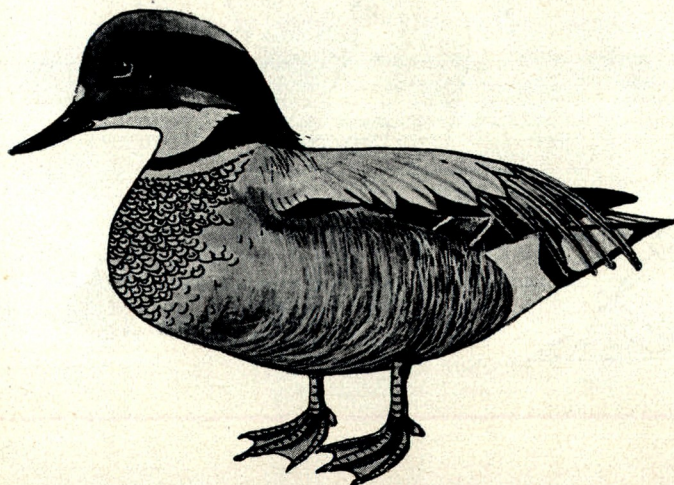
Finally I would like to say that the purpose of these articles is to help Wildfowlers to differentiate between species and sub-species of wildfowl seen or shot here in India. Many of the Wildfowl believed to be very rare in India are, in fact, not so rare but usually included with other species in a bag or not noticed at all. Should anyone be in doubt about identification a wing should be removed in the case of a duck or the tail of a goose and sent to the



GADWALL DUCK

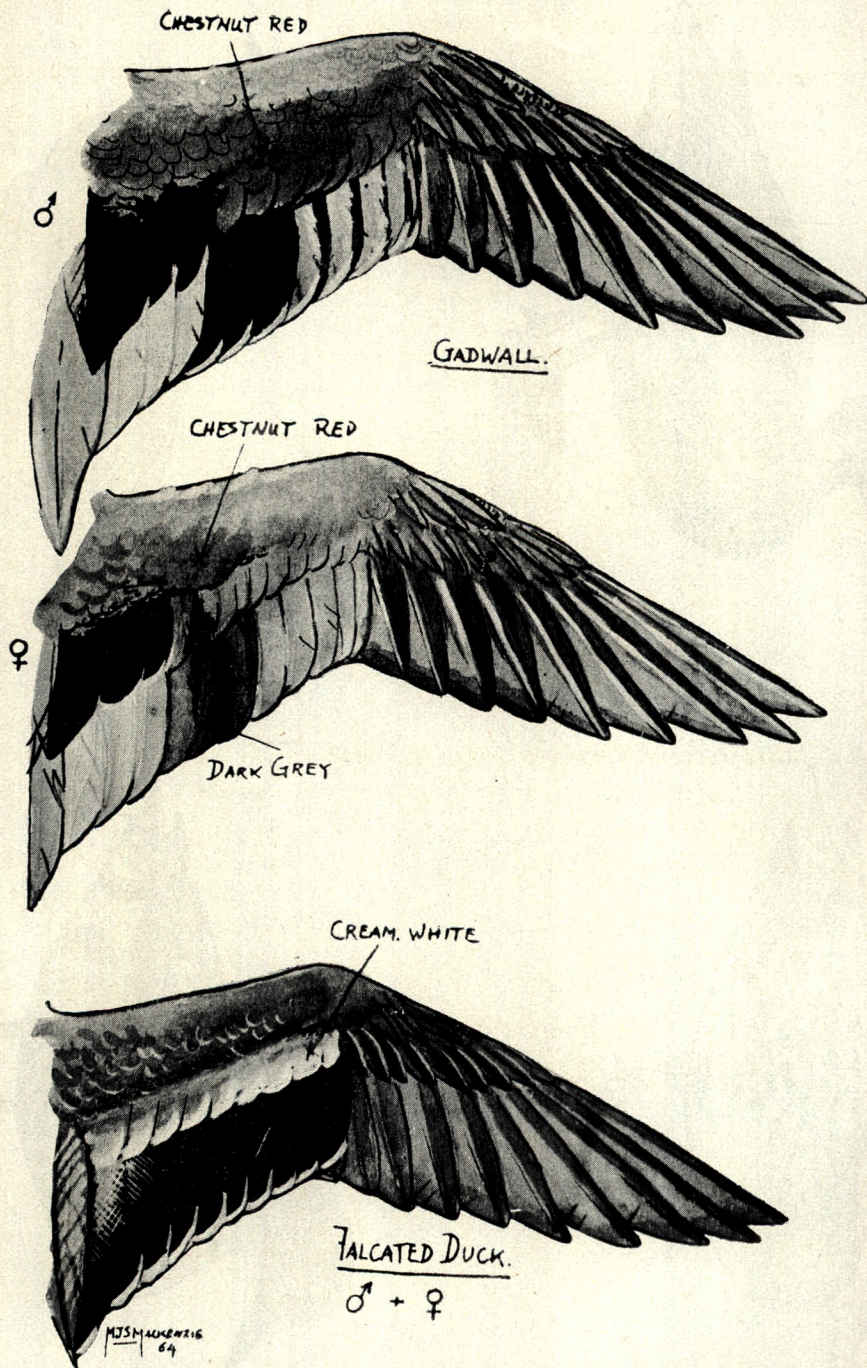


FALCATED DUCK



Wing Key For *Anas falcata* and *Anas strepera strepera*.

Anas strepera strepera:— (1) Wing or Drake Gadwall:—Grey, the rib of the pinions showing cream white, on close inspection. Middle secondaries black, inner secondaries white, outer secondaries misty grey edged with black. The tertiaries elongated and creamy grey. Inner coverts black moving to chestnut red, outer coverts chestnut red. There is also a large patch of chestnut red on the lesser wing coverts, the leading edge of the wing is ringed grey, underside white.



(2) Wing of Duck Gadwall:—Grey, the rib of the pinions showing cream white. Middle secondaries of a blue grey black edged. Inner secondaries white, outer secondaries grey. Inner coverts black, out coverts grey. The tertiaries are grey and much less elongated than in the drake. Some females also have the chestnut red patch on the lesser coverts but to a lesser degree than the drake.

Anas falcata:—(3) Wing of Drake Falcated Duck:—Dark grey brown over all. Speculum black with a blue green sheen at certain light angles. Wing coverts creamy grey; tertiaries very long and narrow, black and grey white coming down to cover the rump and tail.

(4) Wing of Duck Falcated Duck:—Same as the above but lacking the long covering tertiaries.

Bombay Natural History Society (who, I am sure, would help), the Wildfowl Trust, Slimbridge, or to me. Should there still be some doubt I would send the query on to the Wildfowl Trust Representative in W. Pakistan.

Note Ref. April 1964 issue "The Spotbilled Duck of India."

I would like to apologise to readers for not realising that the yellow and red paint in my illustrations would be reproduced in print as black. This I discovered too late and consequently the beak markings are misleading, also the feet and legs look rather black and heavy. I have, therefore, included with this article the three heads re-drawn without paint so that they may be cut out and pasted over the illustrations in the April 1964 magazine. Secondly I note that the sketch numbers have been altered, Nos. 2 and 3 have been interchanged so that it reads that the Burmese Spotbill is similar to the Chinese Spotbill. This should, of course, read 'similar to the Indian Spotbill' in sketch I.

M.J.S. Mackenzie,
Limbuguri T.E.
Tinsukia P.O.
(UPP-ASSAM).

Common Gadwall and Falcated Duck in India.

Early on the morning of 26th January last year, standing to my knees in mud and water with a cold grey dawn just beginning to show to the East over the Brahmaputra I saw the first flight of Gadwall approaching in their characteristic uneven, dotted lines one layer above the other. As they became more distinct wings set, heads up and well back I was thrilled once again by the excitement and beauty of watching wild duck at close quarters in their natural habitat. Suddenly, my attention was drawn to one of the birds in the flight just passing to my left. Although the same size as the others it appeared to have a black head and rather a stiff flying attitude like a Goosander or Smew. The flight then swung about to land into the wind and I was given a clear view of a drake Falcated Duck in all his splendour.

I have no doubt that many readers have had similar experiences but to appreciate sights like this to the full it is always advantageous to know and understand what one has seen. In this article I propose to deal with the common Gadwall which is very numerous in India and the Falcated Duck, a close relative, not commonly seen, or at least, noticed here.

Common Gadwall—*Anas strepera strepera*—Linne.

Among the vast number of migratory duck visiting India each winter the Gadwall come in great flocks staying between November and the early part of March, when they return to their breeding grounds around the Baikal Lake, Russia and Mongolia. They appear to be more common in the East than in the West of India, possibly because they follow the big rivers, the Ganges and the Brahmaputra. I also suspect large numbers breed in the East of Russia and come into India from that side. Their world distribution stretches throughout the Northern Hemisphere south of latitude 55, breeding in Western North America, Europe, Iceland, Algeria, Yugoslavia, Bulgaria, Rumania, Northern Persia and Russia.

The drake Gadwall in breeding plumage: Head and neck pale grey brown spotted with black, crown browner with larger black spots; back grey; rump and tail coverts black; tail grey brown. The underparts are white like a widgeon but the breast is looped with black and white half-rings; wings grey but with the middle secondaries black and the others white and grey, coverts black moving to chestnut red and a large patch of chestnut red on the lesser wing coverts. The bill is black and rather narrow, the lamillae strong and easily seen. The tertiaries (feathers covering wings when folded) are long and pointed giving rather a fine effect but not as impressive as the Falcated Duck. Feet brown yellow, eyes brown.

The female is very like a small Mallard Duck only less intensely marked. The wing is like the male but often the chestnut brown is less distinct or absent altogether. Underparts white, bill dark brown with orange yellow edge and sometimes sides. Legs and feet brown, yellow, eyes brown.

Gadwall are continental duck not often found near coasts and are only found in large numbers well inland as in parts of Eastern Europe, East Asia and Central West America. They fly, walk and swim well only diving when wounded or hard-pressed but are unable to stay down long or go very deep. The nest is found near water on the ground and, I believe, later than most other duck. Their diet is mostly vegetable. In most other parts of the world Gadwall are not very numerous but they collect in great flocks on the open Jheels or big rivers of India, sometimes several thousands in number. I should think only Pintail compete in numbers in India.

Falcated Duck—*Anas falcata*—Georgi

Probably one of the most beautiful duck to be found in India the drake Falcated duck in full-plumage in my opinion ranks with the Mandarin and Carolina in elegance. Chin, throat and foreneck white; the head and hind neck bright metallic maroon on crown and

cheeks, passing to green above and below the line from the eye; a black green shot ring on the lower neck followed by a white one; the nape has a long flowing crest covering the hindneck. The rest of the plumage is silver grey lined with black, more coarsely on the mantle. The breast is white with black double loops rather like the Gadwall drake but bolder; under tail coverts buff, black in the centre; tail black bordered with light grey; the rectrices covered by black topper coverts; wing coverts light grey; speculum black shot with green; tertiaries very long and narrow, black and grey covering the back and tail, iris brown, bill black and legs grey. The male in eclipse resembles the female but has green gloss specs on the head.

The female is brown, not unlike a female Gadwall but has a brown underside and a slight nuchal crest. The bill and legs are grey just like those of the Common teal in both colour and shape. Apart from the wing the bill and legs are what make it quite easy to pick this bird from among a number of Gadwall and, of course, it is much larger than a Common Teal.

To help make it easy to understand the differences of wing pattern I've illustrated both male and female Gadwall and Falcated duck wings. There is also a key to help place the colours.

This species breeds in Eastern and Central Siberia including the Baikal Lake area. Winters in China, Japan, North Indo-China, Burma, Assam and occasionally further south into India. In my experience they are always found in small groups or pairs among flights of Gadwall or feeding with Gadwall and Wigeon. This is why I believe they could quite easily go un-noticed among Gadwall during a shoot especially when the drakes are in eclipse plumage. When in flight it is sometimes possible to note the rather straight flight attitude caused by the long nuchal feathers behind the head. Drakes in full plumage can be distinguished by their dark head colouring and darker undersides. A Gadwall has a white underside so is easily spotted when together with Falcated ducks.

I have quite a number of records of Falcated ducks both male and female shot here in Assam; I am also told there have been records in other parts of India and East Pakistan recently. It would be most interesting should any readers have such records and would let me know. I am sure this beautiful duck is not as rare in India as believed but this can only be proven by accurate accounts of numbers seen or shot. Another very interesting visiting duck is the Baikal Teal (*Anas formosa*) records of which would be most valuable.

One last point regarding the Falcated duck; it used to be known as Falcated Teal but is now considered to be closely related to the Gadwall and more distantly to the Wigeons. It is, therefore, inappropriate to call it a 'Teal' as has previously been done.

M.J.S. Mackenzie.

Falconry—The Sparrowhawks—I

Ounce for ounce the Sparrowhawk is as brave if not more courageous than the most powerful eagle in the world. It is essentially a bird that thrives in cold countries and prefers to migrate to warmer climes during very cold spells in the winter. Judging from its vast distribution all over the globe, many people must be well acquainted with this beautiful hawk. In the world of falconry it has carved out a place for itself and stands out in bold relief. Though European falconers have not been much in favour of classing this stouthearted bird along with the noble falcons, however in the east it has held its own against all other birds of prey. Lately it has been observed that European falconers also have changed their ideas somewhat if not altogether in favour of the game little hawk. This reason for this change in attitude is possibly attributable to the gradual disappearance of the peregrine falcon. Besides there is not much game left in the open country which, with the change in times is of necessity brought more and more under the plough rendering longwings at a great disadvantage, and the accipiters in their element. Also there is always game available for a flight with sparrowhawks though this may not be so in the case of the large predators. Moreover, sparrowhawks are very common, are readily available and, in addition can easily be trained. They are not in the least cumbersome and can be handled by even inexperienced falconers.

As I endeavour to reconstruct the details of my first meeting with this favourite hawk, warmhearted memory creates a living picture in my mind and I see before me the order of things that took shape more than twenty-six years ago. It was after a severe bout with malarial fever, when I was barely sixteen years old, that one fine day in early December my uncle presented me a musket (male sparrowhawk). This was done to cheer me up. It was the first hawk I had ever owned. Being an immature bird it was within a short period of ten days flying to the fist and, it made its first kill (a large Indian shrike commonly known as the butcher bird) on the fourteenth day of its arrival. I spent many happy hours in the company of this wonderful bird but school vacations ended all too soon and, I was as a result of this, obliged much against my will to forsake my beloved hawk for long hours during the day time. Due to this neglect, one wet and windy day, while out hunting I lost my beautiful hawk. In my purile grief I could have for two pins burst into a flood of tears. Next day was the school masters red letter day and the quarterly report that arrived from the school was indeed far from satisfactory. But I am digressing

from the main point which is the sparrowhawk and not merely an episodical discourse on my life history.

It is very interesting to note that Khuda Yar Khan Abbasi in his book on falconry written sometime between AD 1336-1352, makes honourable mention of the sparrowhawk. Listen to the voice of Khuda Yar Khan in one of the oldest treatise on falconry and you also can become a mysterious persian falconer by practising some of his stratagem. He writes, "the bigger and more powerful the sparrowhawk the better will it be. It should have a very small and elongated head, a long body, upright neck and, fine curved-claws. In addition it should have good broad shoulders, a protruding breast and rounded wingtips. At rest on the fist, it should perch very erect after the manner of a 'shahin' (PEREGRINATER). Its shins should be long and slender and its toes short. In flight it should keep low to the ground. A sparrowhawk much given to calling is considered to have an extra fine quality though, the opposite is true in the case of the Goshawk. This is in all certainty the quintessence of a superior sparrowhawk."

Raja Rudradeva, a king of Kumoan (a mountainous kingdom in the Himalayas) who flourished in the sixteenth century writes in his book on hawking "SYAINIKA SASTRA" how the 'basa' sparrowhawk is to be cast at the quarry. The method much in practice at the time was known as 'HASTAMOKA'!. The jesses of the hawk are firmly held by the fingers of the falconer's right hand and the hawk is thrown (cast) forward to gain added impetus. He is in full agreement with Khuda Yar Khan and says in praise of the hawks call "Vasa (sparrowhawk) becomes much admired for its pleasing voice."

In his Baz-Na-Ma-A-Naserie the learned persian Falconer recounts from a horde of experience undoubtedly that the sparrowhawk is as it were a prince relative to all the other birds of prey. He goes on to narrate how time and without number his sparrowhawks—that were in 'YARAK', have baited after hares and other small rodents. He adds however "lest the hawk sustain injuries at the time of binding with the game (hares and rabbits) I did not cast it after them."

So much for ancient history in its value to illuminate the ancestry of this little falcon: my opinion is that we should now get down to the business of describing how to catch, train, and ultimately hunt with our hero/heroine.

A very novel method of catching sparrowhawks is to this day much in vogue in Persia, Afghanistan and Baluchistan. The idea is to locate a tree in which a sparrowhawk is in the habit of roosting. Once this has been established the rest is not so difficult. Just before midnight a party of four or five men approach this tree and when they are some thirty

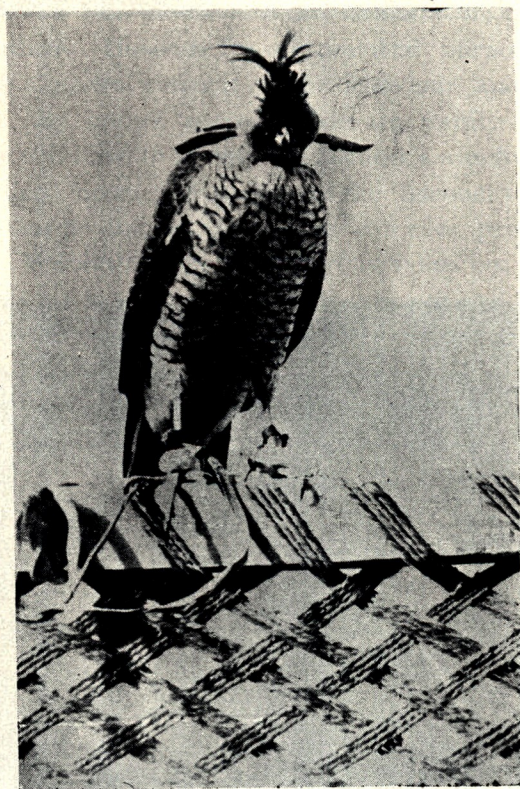
yards from it they halt. Here they proceed to light a lantern which they have brought with them. After every few minutes the lighted lantern is moved a few paces closer to the tree until finally it is brought to bear directly under the tree already selected. Now the group of hunters start joining together end on end a number of sticks which they have brought with them. When they are satisfied that the total length of all the sticks thus combined together and held erect will reach the branch on which the sparrowhawk is perched, they secure a noose made out of horse's hair to the foremost end of this joined rod. Just two or three feet below the noose end of the stick is firmly tied a lighted candle. Now this contraption is very slowly raised and cautiously directed towards the sparrowhawk. If this operation is carried out with care and caution there can be no fear of the hawk taking fright and flying off into the night. The trapper very gently slips the noose over the hawk's head and then a slight pull on the rod will serve to pull tight the slipknot arrangement on the noose. In the commotion that immediately follows the candle flame is extinguished by the vigorous wingbeats of the unfortunate captive, which has by now, for dear life firmly clasped the rod with both its feet. This probably is a tedious method of getting our bird and will undoubtedly cost the falconer some hours of his night sleep. All the same it is quite interesting and of course very exciting.

Sparrowhawks are collected from the nest and the usual procedure is to remove all but one female bird (the largest of the clutch) from the nest. The removal of these will result in a concentrated devotion of the parent birds whose feeding and rearing activities will now be focussed on the one remaining offspring. When this bird becomes fully developed and there remains just a day or two for it to leave the nest it is collected and the rest of the brood picked up earlier returned to the parental care. In this way the falconer is assured of procuring one wellfed and oversized hawk. This method too was practised much in Persia and Afghanistan and, I believe in Europe as well. Whatever be the arguments advanced in favour of rearing sparrowhawk in captivity the fact remains that later on a lot of time and energy will have to be exerted in training these birds to hunt. For quick results immature passage birds trapped early in the season are in my opinion the best.

I have captured a huge number of passagers in the 'Dogaza'. This is of course the simplest way of trapping birds of prey. Another very simple method of trapping sparrowhawks is to construct a wire-meshed cage after the fashion of a cylinder. It should have a diameter of about eighteen inches and a height of about the same size. Monofilament nylon fishing line with a breaking strain of eight to ten pounds is twisted into snares and planted on the top and sides of the cylinder, each snare at approximately two inch distance from its neighbour. A number of house-sparrows are now captured and put into this cylindrical cage



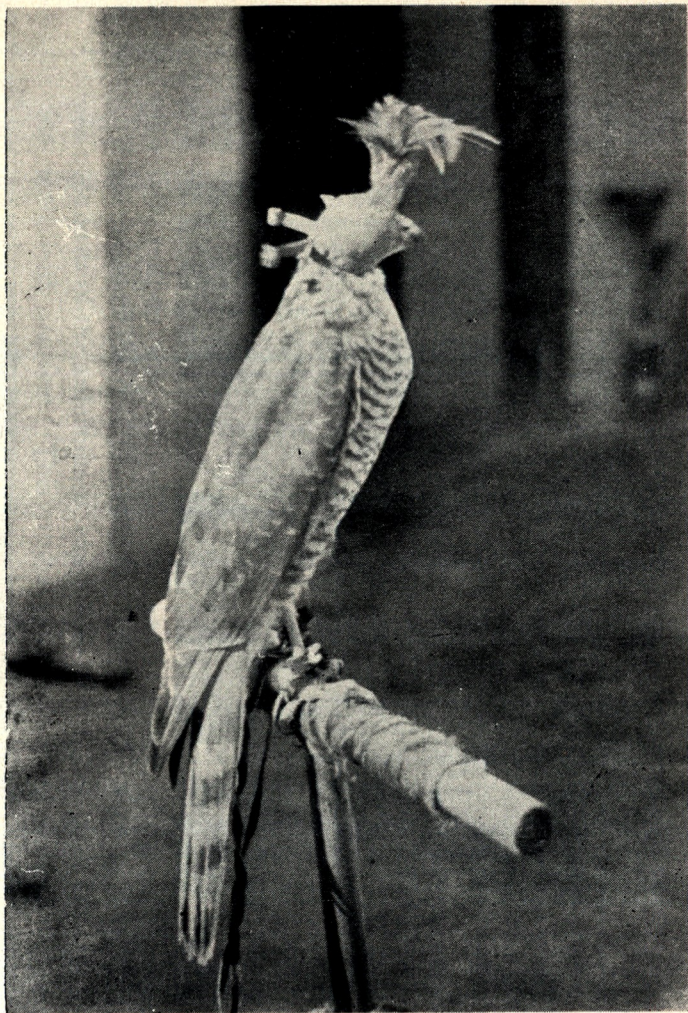
Self with 2 sparrowhawks "Juno & Juliet."



An immature sparrowhawk. See markings on crop and refer to literature.



A freak of nature. The only sparrow in the world (which is on record) to be having black eyes.



2 years old sparrowhawk side view.

from the bottom, which is constructed to function as a trap door. This contraption is a sure firm method of luring into captivity any sparrowhawk or other small hawk which happens to pass within a mile of line of sight distance from it. But the falconer has got to be judicious in his choice of ground and must try to select a bare patch in view of groves and trees. By this means quite a number of sparrowhawks may be caught within a very short period of time. One prerequisite is to be on the site just before sunrise and have the system ready for action as the hawks are beginning to become active. By this means I have collected quite a considerable number of birds and as far as I am aware there is no easier method of trapping hawks and merlins.

Assuming that we have by one of the aforementioned methods been able to capture our hero the first thing to be done will be to slip a hood in its head, and from that very moment onwards training begins. But we are getting on ahead with this business of training a bit too fast. Before any attempt at training be made it is better for the aspirant falconer to get himself acquainted with the habits of the bird he has in hand. It will have to be very clearly understood that just as no two men are never alike, similarly no two hawks can be imagined to behave in the same manner. However for all practical purposes and especially more so for the purpose of training a general concept of the behaviour and reaction of the genus as a whole may be considered. By nature sparrowhawks are sensitive as well as delicate birds and, caution and patience will have to remain the falconer's watchword. Once a bird takes a dislike to anything (be it dog, hood, the colour of the falconer's shirt or coat) the fear becomes so deeply instilled that no amount of training can ever permanently cure or eradicate the damage done earlier. Precautions should always be taken not to excite the hawk unduly. Most of the haggard hawks are by nature extremely nervous and at times prove a little difficult to circumvent. Added to the hazard of sensitivity confronting the falconer is now added the problem of the hawk's delicate constitution. Whereas other hawks are capable of standing quite a considerable amount of manhandling it certainly is not so in the case of the sparrowhawk. Training becomes particularly difficult as any reduction in the hawk's weight will immediately pose some problem or another relevant to the hawk's health. Lifting the hawk back to the fist after it has baited, by a jerky movement of the arm can lead to a lot of trouble later on. Hawks that are thus roughly treated usually die within a few days of captivity. Any attempt to subdue the hawk by such rough treatment will only lead to disappointment. Patience and care, should, therefore, be exercised beyond all reasonable limits. In view of all the foregoing facts it should not be taken for granted that this delicate bird is not capable of destruction to game. I have on more than one occasion seen sparrowhawks in the wild state kill and feed on partridges, and pigeons. Here you find the example of a small hawk

(sparrowhawk) engage and overcome game superior to it in weight. While we are all praise for our hero let us not forget the one outstanding fault latent in all sparrowhawks. And this is the habit of soaring. A very careful watch is, therefore, to be kept on the condition of our hero (heroine) as the least amount of overweight can help the falconer to lose his beloved hawk in never ending mounting spirals to the sky. On the other hand if slightly underfed the hawk very rapidly loses colour and can fall easy prey to the many different types of diseases these birds are susceptible to.

Sparrowhawks when out on the hunt usually adopt different tactics according to the type of country they are hunting in and the time of the day. Since this chapter is devoted to the habits of the sparrowhawk it will not be out of place to mention a few more points in this connection before we turn to the more serious problem of training. It is not at all unusual for these birds to lie in wait for the unsuspecting quarry. I have many a time observed a sparrowhawk stealthily take up position in some dense tree situated by the side of some field or open tract of land. There it has remained quietly perched for very long periods at a stretch waiting for its opportunity to pounce on some unsuspecting quarry and woe betide any bird that tries to cross the open field or perch on any nearby bushes. This practice is resorted to in the early morning hours (just after sunrise). During the afternoon there is of course a complete change in tactics. The hawk rises to the sky soaring to a colossal height and from this commanding position surveys the underlying country. With the added advantage of height its telescopic eyes are able to spot birds feeding in fields and open places at a distance of more than a mile away. In the case of the sparrowhawk I have not seen the long and classical dive so common with the longwings. Maintaining its elevation the hawk begins to glide to a point directly above the place where the birds are feeding, and then comes down in an almost vertical dive. The contact made with the target is breath-taking to the beholder. Down comes the hawk feet out and wings spreadeagled, talons open and ready for action. After having grabbed its prey the hawk carries it to the shelter of the nearest bush and there on the ground, protected from the prying eyes of other predators by the overhanging boughs of the bush it proceeds to despatch its victim. Small birds such as sparrows, finches, and larks must suffer very little pain since they die almost instantaneously. Bigger game such as partridges and pigeons are another story and in this case it takes the hawk (which is much less in weight than either of the two) some little time to overcome the struggles of its worthy antagonist. The general method of killing game is by squeezing time and again the unfortunate victim till all traces of life have been extinguished. Once this job is over the process of feathering starts. The kill is denuded of all but very fine downy feathers. By nature sparrowhawks are very neat birds and prefer to enjoy a meal with as little feathers added as possible. This of course has been varified by the size of casts, (pellets

thrown out containing undigested material) thrown out by sparrowhawks in the wild state. Examination of these casts which are always very small has revealed only the finest downy feathers of the victims. So after a good meal followed by a few hours rest it once again rises to soar. And here we have a point to ponder. We must be in a position to differentiate between this kind of soaring and the one when the hawk is out and on the hunt. This time once again the hawk goes up but lazily and in huge spirals rising very slowly till it has gone up to a great height. There it remains circling for some time and then returns to earth in a series of short aimless dives. This (after supper) soaring is possible only if the hawk has been able to make a kill in the morning hours. In case the hawk has not had any luck in the morning and early afternoon attempts it will in all probability make a kill sometime late in the afternoon. This will of course mean that the hawk may carry its cast till very late the next morning. As long as the cast is not thrown out the hawk will betray no interest in any game and during this period any attempts to trap it will only end in failure.

All sparrowhawks have a regular beat of some five or six square miles and this hunting ground they very jealously guard against the ingress of any intruders. Should by mistake another sparrowhawk happen to find itself on the hunting-ground of a neighbour it will at once be attacked and driven out of the forbidden territory by the rightful owner. It is very interesting to note that these hawks do not only hunt birds but will sometimes go for such game as the smaller kind of bats and squirrels. There grows a gum tree not very far from my house and on those winter evenings when the western sky is brightened by the shoals of sunset and there is enough light to see by, a sparrowhawk may be seen chasing bats. The tree serves as an observation post for the hawk and from it the hawk makes determined dashes after the smaller kind of Indian bat. If not successful in its first attempt it will fly back to its observation post and will repeat the attack with greater determination. In the event of a run of bad luck the hawk keeps on trying till there is barely enough light to see.

Sparrowhawks can fly very fast when they really wish to make a go for game. The following incident will give the reader some idea of the speed these birds are capable of. I was, early one morning, returning to camp after a long and fruitless tramp. The night before I had heard a sambar stag calling in a swampy area adjoining my camp. The country in this part though thickly wooded is in places interspersed with grassy tracts forming marshy areas into which many small streams drain. As I was wading through one such plot (a detour would have led me much out of my way to camp and would have delayed my breakfast unduly) I happened to disturb a snipe which rose from my very feet calling as is their wont and, it had hardly cleared fifteen yards when a sparrowhawk very neatly caught it in mid-air. In that early morning stillness you could have easily heard the smack of the collision from

any corner in the marsh. Obviously the hawk must have been perched in one of the hundreds of trees that lined the swamp and was immediately attracted by the cries of the snipe I had flushed. It had then risen out of the tree, flown into the marshy area and caught the snipe and all this it had managed to achieve in as much time as it had taken the snipe to barely get fifteen yards from its point of starting. As the nearest tree was not less than fifty yards away, and having the relative speed at which a snipe is capable of gaining, it will have to be admitted that the sparrowhawk must have been flying at a terrific velocity. A white sparrowhawk was once owned by my grandfather and it is on record that it caught in midair such fast game as teal. Also it is reputed to have caught ten black partridges in an afternoon's hunt. I have on many occasions seen how black partridge have outflown a goshawk. I have also seen these very partridges caught one after another by a sparrowhawk. My uncle who owned a sparrowhawk many years ago was able to bag (in my presence) four blackpartridges within twenty minutes. These very birds had on a previous occassion defied the combined efforts of a male and female goshawk.

Once again I remember the time when I used to fly a shahin at owls. This shahin (peregrinator) I owned was indeed a magnificent bird and had quite a number of partridges and plovers to its credit. These owls lived amongst the branches of a huge tree (solitary tree) situated in an open field. The shahin falcon would be put up and when it had attained the proper height an attempt would be made to dislodge the owls from the tree. This was usually achieved by bombarding the tree with clods of earth and stones. The owls would take fright and explode out of the tree making a bee line for the next bit of cover which happened to be a mango grove about two hundred yards away. It was on very rare occasions that the shahin falcon by flying like mad was able to strike an owl ere it got to the sanctuary of the grove. Under the circumstances it will have to be admitted that the shahin with its added height had all the factors in its favour. It was during this period that my father who is a keen falconer and a great hawk expert owned a trained sparrowhawk. After the shahin had gone through its paces the sparrowhawk would be given a chance at the owls. Almost always the sparrowhawk was able to capture an illfated owl ere it could gain the safety of the grove. The sparrowhawk was, in comparison to the shahin, in not so advantageous a position and in spite of this was able to score almost every time.

It is not to be taken for granted, however, that the sparrowhawk for all its show of speed with the owls is any faster than the shahin falcon in the long run. Only for very short distances in one terrific explosion of speed is it able to get ahead of the falcon but will certainly be overtaken and beaten by it (shahin) in the long run. In wooded country and in fields not so big long distances mean absolutely nothing and it is only the hawk capable of

short determined dashes that will hold the ring. A few more facts regarding the different shades of colour in which these hawks are found is worth pondering over.

There are quite a number of shades in which these hawks may be found. These shades vary from the almost black birds to the white or albino hawks which are so famous with falconers. Hawks of a lighter hue are in my opinion more easily tameable than the dark coloured birds. A brown hawk or a yellow hawk in the very broadest sense of the term is a general indication of the hawk's colour. In fact every hawk as far as its colour goes is a combination of the many shades of the same colour. For identification purposes we will take into consideration the markings on the crop of the hawk. This too is changeable and over a period of a number of years will be of a completely different hue to what the immature bird may have claimed. With a little bit of experience on the side of the falconer it will be easy to tell the original colour—in the mature bird, as this gets a shade less dark with each successive moult. Birds of a dark brown shade are very handsome but may prove to be slightly difficult to train. Once trained, however, these birds have proved themselves to be quite superior to the ordinary or common coloured hawks. Albino birds are very rare to find and are reputed to be slightly superior in performance to the other hawks.

So much for colour indications; let us once more examine the breast of our worthy hawk and see what further information it will be able to reveal to us in our quest for further knowledge. To the eye of an experienced falconer it will give a huge volume of vital information which will decide the future course of events in respect of the captive's training. This is one way to establish with dead certainty the age of the hawk. In the case of all immature birds it will be noticed that the markings on and in the region of the crop are of a deep "V" formation. As a further guide it may be taken that the "V" marks in the case of immature sparrowhawks will have the span of the two arms of the "V" at the broadest portion (that is at the top of the upright "V") about a third less than the actual depth or what may be called the height of the "V". For taking measurements of this nature it is always best to take into account the markings confined to the region of the hawk's crop and not to the markings further down the breast, as these are sometimes confusing even in the immature bird. With each successive moult the V marks will become more and more shallow and in five or six years time the V marks around the crop will have completely disappeared and instead will appear horizontal bars running in a wavy formation right across the hawk's breast. A further indication regarding the age of a sparrowhawk will be found in the colour of its eyes. Immature birds have light yellow eyes but with the advance in age the colour keeps changing from yellow to red, from red to deep red, and from deep red to almost copper-tan in the case

of very old birds. In a haggard sparrowhawk the eyebrows show up very prominently and appear as grey streaks above the eyes.

After having taken full stock of the bird we have been able to land we should be in a position to safely chalk out some sort of a plan for its training. Those unfortunate souls who are obliged to spend most of their lives in the centre of some very big city where they are made to slave seven to eight hours every day six days a week, and who in addition have no sympathetic being to take care of their interests in their absence, to them I suggest that they better not waste their time going any further in this work. It will be for them a better idea to become a member of some falconry club and on weekends or whenever they are able to tear themselves away from the boredom of office routine or the workshop or whatever their jobs require them to be tied down to, spend an exhilarating day watching other and more fortunate falconers fly their hawks. For hawks are like jewels and they give the beholder a huge amount of pleasure and the owner has the added trouble of training and keeping them. It is always the hawk and never the falconer that makes the kill and does all the hunting. So the watchers of this game are in for almost as much fun as the owner who has only the advantage of possessing the hawk and the satisfaction of having been able to train the bird. Of course there springs at times a bond, a certain kind of attachment, between the hawk and the owner which is very difficult to describe or to sometimes be understood by non-falconers. I have always experienced this feeling but the moment I try to put it into words or to describe it I am unable to do so. I suppose such is the feeling in the case of all good friendship. It is, therefore, this feeling that our friend the hardworking city dweller has to miss.

There are many methods advocated by the various schools of thought regarding the training of sparrowhawks. Even a general survey of the various approaches to the same object would undoubtedly prove to be very interesting ! At the same time it would further prove to be not only time consuming but decidedly very difficult to practise. They are all like plans for some army manoeuvre each one presenting a slightly different type of tactics involved. Most of these cut and dried plans fall short of the objective as the designer has failed to keep into consideration one point or another and has left so much to be taken for granted. Shock-tactics are always very dangerous and wherever drugs or strongarm methods are suggested they should be definitely avoided. In the old days every ignorant falconer claimed to possess one or two short-cut methods of training a hawk within the short span of three or four days. Sometimes the services of such unworthy falconers were requested. In case no such criminal was at hand his nefarious prescriptions were compounded and tried on the poor hawk. In my opinion a falconer is to be employed only if he is able to keep

hawks in tip top shape and in hunting trim. No person who calls himself a falconer or is worthy of that title should under any circumstances try to experiment with hawks or indulge in shortcut methods regarding their training. Setting up records of training a hawk within two or three days of its capture is not very true, but even if it were possible should never be tried. It is not unusual for a hawk after a dose of such treatment to get lost, die or fly away. In old Persian books on falconry many such methods are given. Right up to the present times it was customary in India to give a freshly caught hawk a dose of camphor. This would set up such violent reaction that the hawk would have to go through a series of convulsions and would later be so ill as to appear quite tame. All such methods would in the end prove to be quite worthless. Unfortunately such methods did exist at one time or another and are held on record in old Persian and Sanskrit manuscripts. Mainly to warn an inexperienced falconer from indulging in such practice an example is given here as an object lesson. The unsoundness of approach to training by such means can only be questioned by the ignorant and the foolish.

—Prince S.M. Osman of Afghanistan.

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7. Sri R.D. Singh, The Doon School, Dehra Dun.
8. Mr. Berthold A. Von Stohrer, Central P.O. Box 662, Tokyo, Japan.
9. Dr. R.N. Misra, 11, Sewak Ashram Road, Dehra Dun.

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3. The Officer Incharge, Wild Life Section, Southern Forest Rangers College, Coimbatore-2.
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5. Shri Shiv Shanker Pd., Election Supervisor, S.D.O's, Jamui (Monghyr) Bihar.
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10. Mr. A.C. Destanque, 5A, Uggar Road, Dehra Dun.
11. Sri Thakur Jai Kirat Singh, Administrator, His Highness Mahraja of Jodhpur's Estate, Jodhpur.
12. Mr. E. Hanumantha Rao, C/O K.H. Sharma Rao & Sons, P.B. 566, Bangalore-2.
13. Mr. Zanier Aldo, C/O Snam Ltd. 59/C Rajpur Road, Dehra Dun.
14. Smt. Satyavati Dang, President, Himachal Pradesh Congress Committee, 6, The Mall, Simla.

15. Captain Harivansh Kumar, C/O Dr. K.K. Mathur, 105, Chandra Nagar, Dehra Dun.
16. Mr. J.W. Marshall, 69, Sunder Nagar, New Delhi.
17. Mr. Claud Boote, The English Electric Company, A.E.I. Post Box No. 1, Bhopal. M.P.
18. Mr. Norman H. Ball, US AID/INDIA, Faridkot House, Lytton Road, New Delhi.
19. Mr. W. Lowrie Campbell, C/O American Embassy, Chanakaya Puri, New Delhi.
20. Shri R.K. Dang, 13A, S.E. Railway Flats, Garden Reach, Calcutta-43.
21. G.C. M.K. Munshi, (T/1165) "B" Bn.-4-Coy, I.M.A., Dehra Dun.
22. Mr. Peter F.R. Jackson, 27, Prithvi Raj Road, New Delhi-11.
23. Sri Gautam Narayan, Flat No. 3, 36, Theatre Road, Calcutta-16 (W. Bengal).
24. Mr. Aloke Sen, Islam Lodge, Canary Hill Road, Hazaribagh (Bihar).
25. Shri Subodh Chand, 15, Dispensary Road, Dehra Dun.

Institutional Member:—

1. The Principal, Sherwood College, Nainital.

Affiliated Member:—

1. Biological Society, K.K.M. College, P.O. Jamui, Dist. Monghyr.

Educational Members:—

1. Prof. Indra Deo Sinha, K.K.M. College, P.O. Jamui, Dist Monghyr (Bihar).
2. The Principal, Sainik School, P.O. Tilaya-Dam, Dist. Hazaribagh (Bihar).
3. Sri Pratap Singh, Teacher, C/O Col. Brown School, P.B, 31, Dehra Dun.
4. The Principal, Springdales School, Pusa Road-Upper Ridge Junction, New Delhi-5.
5. Mr. James Greene, 38, Friends Colony East, New Delhi-14.
6. The Principal, Sainik School, Jamnagar.
7. Prof. Brahmdeo Narayan Singh, Head of the Deptt. of Hindi, K.K.M. College, Jamui, P.O. Jamui, Dist. Monghyr (Bihar).

Professional Members:—

1. Sri Om Kumar, Divisional Forest Officer, Dumka Division, P.O. Dumka (S.P.) Bihar.
2. The Conservator of Forests, Working Plans Circle H.P., Willow Bank, Simla-1.
3. The Conservator of Forests, Eastern Circle, Nainital.
4. The Conservator of Forests, Tehri Garhwal Circle, 8, Dobhalwala, Dehra Dun.
5. The Conservator of Forests, Western Circle, U.P., Nainital.
6. The Divisional Forest Officer, Son Forest Division, Mirzapur, U.P.
7. Dr. Phyllis C. Jay, National Centre for Primate Biology, University of California, Davis, California.
8. Mr. Juan Spillett, All India Institute of Hygiene and Public Health, 110, Chittaranjan Avenue, Calcutta-12.

Honorary Member:—

1. Sri R.C. Kaushik, Director of Forest Education, F.R.I. and Colleges, Dehra Dun.

BOOK REVIEWS.

Call of the Tiger, by M.M. Ismail—Faber & Faber, London. 18s.

"*Call of the Tiger*" a title that reminds one of an admirable '*Shikar*' book with the same title by Col. A. N. W. Powell. The author is an experienced '*Shikari*' who has known glorious days of beautiful game at reasonable cost, and expensive shikar expeditions of today in 'overshot forests. Col. Ismail shows that real '*Shikar*' consists in doing all the "*Bandobast*" one's self and not in being content with the role of "*The Trigger squeezer*". It is a commendable suggestion worth following. The book is interesting reading and throws light on the unpredictable nature of wild animals—tigers and panthers in particular. Col. Ismail talks of "the pleasures" of sitting over 'machans' at night for carnivorae but it has to be pointed out that the practice is against game laws in many States in India in the interest of Wild Life Preservation.

R. N. M.

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The World of the Tiger, by Richard Perry Cassels, London. 30s.

A vivid and fascinating account of Tigers—the world over—with a striking flashlight photograph of the gentleman of the Jungle—by F. W. Champion. The book is a comprehensive survey based on compilation of much that has been written about Tigers in the last hundred or more years. The author has taken pains to read and compile tiger anecdotes and behaviour studies from the point of view of the hunter. Not being based on personal observation by the author the conclusions drawn are secondhand at best and sometimes wrong, but still give the reader a good account of the habits of the tiger. The author deserves credit for the trouble he has taken and the reader will find the book interesting.

R. N. M.

पत्नियों में बहुपतित्व

बहुपतित्व (पालीऐन्ड्री) में पतियों की अधिकता होती है। जब एक स्त्री के एक से अधिक जीवित पति होते हैं तो इसे बहुपतित्व (पालीऐन्ड्री) कहते हैं। इसके विपरीत एक नर द्वारा अनेक पत्नियों से विवाह करने की प्रथा को बहुपत्नीत्व (पालीगेमी) कहते हैं। यद्यपि मानव जाति और पक्षियों दोनों में एक पति का एक पत्नी के साथ विवाह करने की प्रथा (मोनोगेमी) एक नियम है, परन्तु अत्यन्त प्राचीन काल से बहुत से देशों में मानव जाति में बहुपत्नीत्व का प्रचलन रहा है और आज भी संसार के कुछ भागों में इसका प्रचलन है। बहुत से पक्षियों में भी बहुपत्नीत्व की प्रथा है। भारतीय पक्षियों में मोर (*Pavo cristatus*) बया (*Ploceus philippinus*), बामनी बया अथवा स्ट्रीएटिड वीवर बर्ड (*Ploceus manyar*) हूकना अथवा ग्रेट इण्डियन बस्टर्ड (*Choriotis nigriceps*), इत्यादि में नर पक्षी एक से अधिक पत्नी रखते हैं। इसके विपरीत बहुपतित्व का प्रचलन मानव जाति तथा पक्षियों दोनों में बहुत कम है।

बहुपत्नीत्व धनी तथा शक्तिशाली पुरुषों के लिए सदैव से विलास तथा विषय—सुख रहा है। कहा जाता है कि भगवान श्रीकृष्ण के सोलह हजार रानियाँ थीं। परन्तु एक स्त्री का अनेक पतियों से विवाह करने की प्रथा केवल निर्धन तथा अशक्त लोगों तक सीमित रही है। महाभारत की नायिका महारानी द्रौपदी द्वारा पंच पांडवों अर्थात् युधिष्ठिर, भीम, अर्जुन, नकुल तथा सहदेव का वरण उपर्युक्त परिभाषा का अपवाद है। जहाँ तक मानव जाति का सम्बन्ध है, बहुपतित्व का साधारण नियम यह रहा है कि जिन जातियों में क्षेत्र की आर्थिक कठिनाइयों के कारण एक पुरुष के लिए यह सम्भव नहीं है कि वह एक पत्नी रखने का व्यय सहन कर सके अथवा एक स्वतन्त्र परिवार का निर्वाह कर सके, पुरुष इस प्रकार का व्यय अन्य पुरुषों के साथ बाँट लेता है और साथ-साथ उसे अपनी पत्नी को भी बाँटना पड़ता है और इस प्रकार एक स्त्री कई पुरुषों की काम-तृप्ति करती है। इसके अतिरिक्त बहुपतित्व का एक अन्य कारण भी है। समाज में स्त्रियों की संख्या पुरुषों की संख्या की अपेक्षा कम हो जाने से बहुपतित्व का प्रचलन हो जाता है। यह देखा गया है कि जिन जातियों में बहुपतित्व की प्रथा है उनमें जो पुरुष एक पत्नी साझे में रखते हैं वे साधारणतया एक ही परिवार के होते हैं। वे भाई हो सकते हैं अथवा अन्य सन्निकट सम्बन्धी हो सकते हैं; परन्तु ऐसे उदाहरण भी अज्ञात नहीं हैं जब एक स्त्री के कई ऐसे जीवित पति हों जो एक दूसरे के सम्बन्धी नहीं हैं परन्तु किसी कारणवश एक साझे का जीवन व्यतीत कर रहे हों। बहुपतित्व हिमालय के कई क्षेत्रों में प्रचलित है। इस प्रकार के दो क्षेत्र टिहरी-गढ़वाल के रवाई तथा जौनपुर परगना तथा देहरादून जिले का जौनसार बाबर परगना हैं। इन क्षेत्रों में बहुपतित्व समाज का नियम है। जहाँ इसकी प्रथा है वहाँ एक परिवार के सब भाई एक पत्नी अथवा पत्नियों के पति होते हैं तथा समस्त परिवार का एक कुलपति होता है जिसके अधीन सब सदस्य रहते हैं। इस प्रकार के परिवार में जब भी नये विवाह का प्रस्ताव होता है तो सबसे बड़े भाई का औपचारिक विवाह हो जाता है और वधू सब भाइयों की पत्नी बन जाती है चाहे उन भाइयों की आयु

कुछ भी हो। पत्नी का अपने पतियों के साथ सम्बन्ध कुछ लौकिक रीतियों पर आधारित होता है जिनको सभी पति साधारणतया मानते हैं और इसलिए कदाचित ही कभी कोई पारिवारिक झगड़ा अथवा विवाद होता है। साथ ही साथ इस प्रथा के कारण एक अत्यन्त संयुक्त परिवार का निर्माण होता है। जो कि पुरुषों के वैमनस्य तथा प्रतिद्वन्द्वता से मुक्त होता है। परन्तु इस प्रथा से पत्नी पर अत्यन्त श्रम पड़ता है और प्रायः उसके स्वास्थ्य पर हानिकर प्रभाव पड़ता है और कभी-कभी वह बंध्या हो जाती है। बहुपतित्व भारत के कुछ अन्य भागों में (जैसे नीलगिरि पर्वत की एक जाति में), तिब्बत में तथा कुछ अफ्रीकी जातियों में भी प्रचलित है।

विचित्र बात है कि बहुपतित्व के उपरोक्त कारणों में से कोई भी कारण उन पक्षियों पर लागू नहीं होता है जिनमें बहुपतित्व प्रचलित है। यदि हम पक्षियों का विश्लेषणात्मक अध्ययन करें तो यह ज्ञात होगा कि या तो नर और मादा पक्षी रंग में समान होते हैं अथवा उनके रंगों में भेद होता है जिसे 'डाइफार्फिज्म' कहते हैं। जिन पक्षियों में नर और मादा पक्षी के रंगों में भेद होता है उनमें सामान्यतया नर अधिक सुन्दर होता है और उसका रंग अधिक चमकीला होता है और वह ही प्रजनन ऋतु में कामुक-क्रीड़ा तथा प्रणय लीला आरम्भ करता है, तथा यदि आवश्यकता पड़े तो मादा पक्षी को प्राप्त करने के लिए अन्य प्रतिद्वन्दी नर पक्षियों से घमासान युद्ध भी करता है। जिन पक्षियों में बहुपतित्व प्रचलित है उनमें प्रकृति ने अथवा प्राकृतिक प्रवृत्ति ने यौन-सम्बन्धी आकर्षण का अभिनय उलट दिया है। इस प्रकार के पक्षियों में मादा अपेक्षाकृत अधिक सुन्दर होती है और कामुक-क्रीड़ा तथा प्रणय-लीला आरम्भ करती है और अण्डों को सेने तथा बच्चों को पालने का भार नर पर रहता है। यह दिलचस्प बात है कि इस प्रकार के पक्षियों में मादा नर से बड़ी होती है, यद्यपि यह सदैव आवश्यक नहीं है कि यदि किसी प्रजाति में मादा नर से बड़ी हो तो उस प्रजाति में बहुपतित्व होगा। उदाहरण के लिए फाल्कनीडी परिवार में कुछ प्रजातियाँ ऐसी हैं जिनमें मादा नर की अपेक्षा आकार में बड़ी होती है जैसा कि नीचे की तालिका से स्पष्ट है, परन्तु इनमें बहुपतित्व नहीं है। इसी प्रकार का पक्षी खेर मोर अथवा 'लेसर फ्लोरीकेन' (*Sypheotides indica*) है परन्तु इनमें भी बहुपतित्व नहीं है। इसे लिख भी कहते हैं।

परिवार	प्रजाति	नर का आकार	मादा का आकार	वैवाहिक सम्बन्ध
Falconidae (आर्डर Accipitres)	ओकाब (<i>Aquila repax</i>)	२५ इंच	२८ इंच	एक पति—एक पत्नी
	शाहबाज (<i>Spizaetus cirrhatus</i>)	२६ इंच	२६ इंच	"
	पेल हैरियर या गिरगिटमार (<i>Circus macrourus</i>)	१८ इंच	१६ इंच	"
	लांग-लेगिड बज्रई (<i>Buteo rufinus</i>)	२२ इंच	२४ इंच	"

परिवार	प्रजाति	नर का आकार	मादा का आकार	वैवाहिक सम्बन्ध
Falconidae (आर्डर Accipitres)	शिकरा (<i>Astur badius</i>)	१२ इन्च	१४ इन्च	एक पति-एक पत्नी
	लगगर (<i>Falco jugger</i>)	१६ इन्च	१८ इन्च	एक पति-एक पत्नी (यह जीवन भर के लिए जोड़ा बना लेता है)
	टुसमटी (<i>Falco chicqera</i>)	१२ इन्च	१४ इन्च	„
Otididae (आर्डर Grallae)	खेर मोर अथवा लिख (<i>Sypheotides indica</i>)	१८ इन्च (भार १४ औंस से १ पौंड ४ औंस तक)	२० इन्च (भार १ पौंड २ औंस से १ पौंड १० औंस तक)	एक पति-एक पत्नी

Hemipodii एक ऐसे छोटे पक्षियों का आर्डर है जो यद्यपि वास्तविक बटेरों (ट्रू क्वेल्स) से आकृति में बहुत समान होते हैं परन्तु शरीर रचना तथा प्रजनन की आदतों की दृष्टि से बहुत भिन्न होते हैं। भारत में पाये जाने वाले छोटा लौवा अथवा लिटिल बटन-क्वेल (*Turnix Sylvatica dussumier*), इंडियन बटन-क्वेल (*Turnix maculatus*), गुलू अथवा ब्लू लेगिड बस्टर्ड-क्वेल (*Turnix suscitator*), बस्टर्ड-क्वेल (*Turnix pugnax*) तथा लौवा अथवा येलोलेगिड बटन-क्वेल (*Turnix tanki*) उपरोक्त आर्डर Hemipodii की प्रजातियां हैं और वास्तव में अंग्रेजी में इनका नाम क्वेल सही नहीं है। वास्तविक बटेरों (ट्रू क्वेल्स) के प्रत्येक पंजे में चार अंगुलियां होती हैं तथा उनकी मादायें नरों से छोटी होती हैं। (वास्तविक बटेरों आर्डर Gallinae के परिवार Phasianidae की प्रजातियां हैं।) इसके विपरीत जीनस टर्निक्स की प्रजातियों में जो भारत में पाई जाती हैं पक्षियों के प्रत्येक पंजे में केवल तीन अंगुलियां होती हैं और पिछली अंगुली नहीं होती है, और मादा नर से बड़ी होती है और अधिकतर प्रजातियों में मादाओं का रंग नरों के रंग से अधिक चमकीला होता है। जीनस टर्निक्स की उपरोक्त प्रजातियों में बहुपतित्व (पालीऐन्ड्री) प्रचलित है और उनकी प्रजनन की आदतें असाधारण परन्तु विचित्र तथा विशिष्ट हैं। प्रजनन ऋतु में मादा दुन्दुभी की तरह एक विशिष्ट पुकार ड्र-र-र-र-र मुक्त नरों को फंसाने के लिए देती है और इस पुकार को सुनकर मुक्त नर (अर्थात् जो अण्डों को से नहीं रहे होते हैं, अथवा बच्चों को पाल नहीं रहे होते हैं) मादा की ओर आकर्षित होते हैं। जब इस प्रकार नर आकर्षित हो जाते हैं तो मादा उनके सामने अपने समस्त सौंदर्य का प्रदर्शन बड़े परिश्रम से करती है और प्रलोभन देती है और उनको मोहित करने का प्रयत्न करती है जब तक वे काम-विभोर नहीं हो जाते। मादायें बड़ी झगडालू होती हैं और यदि उसी स्थान पर एक से अधिक मादायें वर्तमान हैं तो उनमें कलह होने लगता है और प्रतिद्वन्द्वी मादायें उच्च ड्र-र-र-र-र स्वर से पुकारती हुई एक

दूसरे को चुनौती देती हैं और एक मन पसन्द नर को प्राप्त करने के लिए आपस में एक दूसरे से भयंकर युद्ध करती हैं। जब एक मादा नर को प्राप्त कर लेती है तो वह उसके साथ प्रणय करती हैं और जैसे ही वह एक बार के पूरे अण्डे (अण्डों का क्लच) दे लेती है वह पति को छोड़ देती है और दूसरे पति की खोज में चल देती है और प्रणय तथा प्रजनन का कार्य इसी प्रकार चलता रहता है। बेचारे परित्यक्त पति पर परिवार की देखभाल का भार पड़ जाता है और उसी पर अण्डों को सेने और बच्चों के पालन-पोषण की जिम्मेदारियां होती हैं जिनको वह बड़ी लगन के साथ पूरा करता है। यह उसके लिए विशेष सराहनीय बात है। इस प्रकार एक प्रजनन ऋतु में एक मादा कई बार अण्डे देती है तथा तदनुसार प्रजनन ऋतु बड़ी लम्बी होती है। जैसा कि ऊपर कहा गया है, मादायें प्रकृति से बड़ी भगड़ालू होती हैं और नर को प्राप्त करने के लिए आपस में घमासान युद्ध करती हैं।

छोटा लौवा अथवा लिटिल बटन-क्वेल (*Turnix sylvatica dussumier*) एक अत्यन्त दिलचस्प पक्षी है। यह भारत में पाये जाने वाले शिकार के पक्षियों में सबसे छोटा होता है। मादा की लम्बाई लगभग पाँच इन्च होती है और नर उससे थोड़ा छोटा होता है। मादा का भार लगभग १.५ औंस होता है और नर का भार लगभग १.१ औंस होता है। प्रजनन ऋतु के आगमन पर मादा काम से मस्त हो जाती है और एक मृदु भनभनाती हुई पुकार नर को आकर्षित करने के लिए लगाती है। यह पुकार विशिष्ट होती है और ऐसा प्रतीत होता है कि शब्द दूर से आ रहा है। यह पुकार कूज तथा पुरं शब्दों का क्रास सी प्रतीत होती है। यदि एक ही स्थान पर अथवा समीप-समीप एक से अधिक मादायें उपस्थित होती हैं और पुकार को सुनकर एक नर आकर्षित हो जाता है तो उस नर को प्राप्त करने के लिए मादाओं में आपस में घोर युद्ध होता है और नर एक किनारे खड़ा एक दर्शक की तरह यह दृश्य देखता रहता है। अन्त में विजयी मादा उस नर को अपना लेती है और उसके साथ प्रणय-लीला तथा काम-क्रीड़ा करती है। वह नर के चारों ओर घूम-घूमकर ठुमकती है, इठलाती है, ऐंठती है, शरीर को घुमाती है और विभिन्न कामुक मुद्राओं का प्रदर्शन करके नर को रिझाती है। मुख्य बात यह है कि इन सब प्रदर्शनों की चालों में तथा प्रणय में मादा ही अगला कदम उठाती है और लीलायें आरम्भ करती है। तत्पश्चात् मादा गर्भवती हो जाती है और निश्चित समय के उपरान्त अण्डे देती है। एक बार में वह चार अण्डे देती है। अण्डों का रूप चौड़ा अण्डाकार होता है और छोटा सिरा कुछ नुकीला होता है। अण्डों का औसत आकार लगभग 0.58×0.46 इंच होता है। अण्डे देने के पश्चात् मादा अपने इस पति को छोड़कर दूसरे नर की तलाश में चली जाती है और पति महोदय अण्डों को सेते हैं और जब बच्चे निकल आते हैं तो उनका पालन-पोषण करते हैं। मादा दूसरे नर को खोजती रहती है और जैसे ही कोई नर फंसा वह उसके साथ प्रणय कर लेती है और फिर गर्भवती हो जाती है। इस बार भी पूरे अण्डे दे लेने के पश्चात् तुरन्त वह इस दूसरे पति को छोड़ देती है और तीसरे नर की तलाश में चल देती है। दूसरे पति महोदय दूसरे बार के अण्डों को सेते रहते हैं। ऐसा विश्वास किया जाता है कि एक मादा जितनी बार पतियों को प्राप्त कर पाती है उतनी ही बार वह अण्डे देती है। इस पद्धति के फलस्वरूप प्रजनन ऋतु की अवधि बहुत लम्बी होती है और वर्ष के लगभग प्रत्येक महीने में छोटा

लौवा के अण्डे मिल सकते हैं, परन्तु तो भी मादायें अधिकतर अण्डे जून से सितम्बर तक देती हैं। पति तथा पत्नी दोनों मिलकर घोंसला बनाते हैं। घोंसला घास का बना होता है जो निकृष्ट बन अथवा फसलों में किसी प्राकृतिक गड्ढे में उगी हुई घास के तनों के बीच में परतों के रूप में रख दी जाती है जिससे गद्दी सी बन जाये।

गुलू (*Turnix suscitator*) का घोंसला भी छोटा लौवा (*T. sylvatica*) के घोंसले के समान होता है। गुलू की मादा एक बार में तीन या चार अण्डे देती है जो कि छोटा लौवा के अण्डों के समान होते हैं। लौवा (*T. tanki*) घोंसला या तो भूमि को खुरचकर और फिर उसमें घास की परत लगाकर बनाता है अथवा घास के मैदान में किसी प्राकृतिक गड्ढे में घास-फूस के टीले के आश्रय में घास की परत लगाकर बनाता है। इसकी मादा भी गुलू की भाँति एक बार में चार अण्डे देती है परन्तु इन अण्डों का रंग गुलू के अण्डों के रंग की अपेक्षा सामान्यतया अधिक गहरा होता है।

राजचहा अथवा पेन्टिड स्नाइप (*Rostratula benghalensis*) एक मध्यम आकार का पानी में हलकर चलने वाला (वेडिंग) पक्षी है। इसके पर अत्यन्त सुन्दर रंग के होते हैं जैसे कि प्रकृति ने अद्भुत चित्रकारी की हो। अपने अद्भुत सुन्दर रंग तथा शरीर की बेढंगी बनावट के कारण यह पानी में हलकर चलने वाले अन्य पक्षियों से आसानी से पहचाना जा सकता है। इसके शिखर पर एक ओर से दूसरी ओर तक मटमैले भूरे (बर्फ) रंग का पट्टा तथा अद्भुत रंगे हुए पर विशेष हैं। बटन-क्वेलों के समान राजचहा में भी बहुपतित्व प्रचलित है। राजचहा की मादा नर की अपेक्षा आकार में बड़ी होती है और उसके पंखों का रंग अधिक चमकीला तथा सुन्दर होता है। मादा राजचहा की लम्बाई लगभग ११ इन्च तथा भार ४.४ से ६.४ औंस तक होता है। नर राजचहा की लम्बाई लगभग १० इन्च तथा भार ३.५ से ४.६ औंस तक होता है। राजचहा का अंग्रेजी नाम स्नाइप सही नहीं है क्योंकि यह वास्तविक स्नाइप नहीं है। यह आर्डर *Grallae* के परिवार *Rostratulidae* की प्रजाति है जबकि वास्तविक स्नाइप (उदाहरणार्थ कॉमन अथवा फैनटेन स्नाइप (*Capella gallinago*) जिसे हिन्दी में चहा कहते हैं) आर्डर *Grallae* के *Charadriidae* परिवार की प्रजातियाँ हैं। वास्तविक स्नाइप पक्षी अच्छे शिकार के पक्षी माने जाते हैं और इनका मांस स्वादिष्ट होता है। इसके विपरीत राजचहा न तो शिकार की दृष्टि से अच्छा पक्षी है और न इसका मांस ही स्वादिष्ट होता है। साथ ही, वास्तविक स्नाइप के नर-मादा एक ही रंग-रूप के होते हैं, परन्तु जैसा कि ऊपर कहा गया है, राजचहा के नर-मादा के रंग-रूप में अन्तर होता है। राजचहा की मादा वैवाहिक सम्बन्धों में प्रधान भाग लेती है। मादा नर को प्रणय के लिए मनाती है और प्रणय-लीला तथा काम-क्रीड़ा आरम्भ करती है और उनमें सक्रिय भाग लेती है। पति प्राप्त हो जाने पर दोनों मिलकर घोंसला बनाते हैं और जैसे ही मादा अण्डे दे लेती है वह पति तथा अण्डों को छोड़कर दूसरे पति की तलाश में चली जाती है और प्रथम पति अण्डों को सेता है और बच्चे निकलने पर उनका पालन-पोषण करता है। मादा दूसरा पति प्राप्त हो जाने पर उसके साथ समागम करती है और दूसरी बार अण्डे देने के पश्चात् दूसरे पति को भी छोड़ देती है। इसी प्रकार प्रणय तथा अण्डे देने का क्रम चलता रहता है। मादा प्रणय-प्रसंगों में प्रधान रहती है

और सदैव हो अगला कदम उठाती है और नियोज्य नर को प्राप्त करने के लिए अन्य मादा प्रतिद्वन्द्वियों से युद्ध करती है। इसकी पुकार का स्वर गहरा और खोखला होता है जैसे कोई खाली बोतल में धीरे से फूंक रहा हो। राजचहा के सम्बन्ध में एक और विशेष बात है कि इस प्रजाति में नर पक्षियों की संख्या मादा पक्षियों से अधिक है और इस प्रजाति में बहुपतित्व होने के लिए यह बात भी कुछ हद तक उत्तरदायी प्रतीत होती है। फलस्वरूप प्रजनन ऋतु बड़ी लम्बी होती है और जहां भी भोजन तथा पानी की दशा उचित रहती है वहां प्रजनन ऋतु वस्तुतः सम्पूर्ण वर्ष भर रहती है। राजचहा का प्रणय-प्रदर्शन भी अद्भुत है। इसमें वे पंखों को फैलाकर आगे की ओर चोंच के सिरे के पार लाते हैं और साथ ही साथ पूंछ को फैलाते हैं, और एक अनोखा नृत्य प्रदर्शन करते हैं। नृत्य-प्रदर्शन के साथ-साथ वे एक सी-सी स्वर भी निकालते हैं, और ऐसा प्रतीत होता है जैसे वे प्रेम की शपथ ले रहे हों। पति और पत्नी दोनों मिलकर घोंसला बनाते हैं। घोंसला घास, तृण, सरहरी और मोथा का बना होता है और उसकी आकृति कसी हुई चपटी परतों की होती है जिसमें बीच में थोड़ा गड्ढा होता है। वे घोंसला या तो भूमि पर बनाते हैं अथवा जल के समीप किसी स्थान पर वनस्पति के गुच्छों में बनाते हैं। मादा एक बार (क्लच) में चार अण्डे देती है। अण्डों की आकृति साधारण चौड़ी अण्डाकार होती है परन्तु छोटा सिरा कुछ दबा हुआ होता है और कुछ लम्बा होता है। अण्डों की माप लगभग 1.40×0.88 इंच होती है।

यद्यपि प्रसिद्ध पक्षी-विद्या विशेषज्ञ श्री सालिम अली का कहना है कि पिहो या पिह्या अथवा फीजेन्ट टेल्ड जैकना (*Hydrophasianus chirurgus*) सम्भवतः एक और प्रजाति है जिसमें बहुपतित्व प्रचलित है परन्तु इस सम्बन्ध में निश्चित तथा समर्थक विवरण उपलब्ध नहीं है। पिहो आर्डर *Grallae* के परिवार *Jacanidae* की एक प्रसिद्ध प्रजाति है। पिहो की मादा नर से बड़ी होती है, परन्तु ब्राँज विन्गड् जैकना (*Metopidius indicus*) तथा अन्य जैकनों में नर मादा से बड़ा होता है। पिहो के नर की लम्बाई साधारणतया १२ इन्च होती है परन्तु ग्रीष्म ऋतु में लम्बे पूंछ के परों के कारण लम्बाई लगभग ६ इंच बढ़ जाती है। इसके अतिरिक्त नर और मादा पिहो समान होते हैं। पिहो पूर्णतया जल के जीवन के लिए अनुकूल होता है। इसकी पुकार अत्यन्त विचित्र अनुनासिक 'ट्रियों-ट्रियों' होती है। इसकी प्रजनन ऋतु स्पष्ट तथा सीमित होती है जो कि वर्षा-ऋतु में जून से अगस्त तक रहती है। यद्यपि इसके प्रत्येक पंख के भुकाव पर एक सुदृढ़ तेज काँटा होता है जिसका उपयोग प्रजनन ऋतु में प्रतिद्वन्द्वियों से लड़ने में होता है परन्तु यह काँटा नर तथा मादा दोनों में होता है। पिहो के घोंसले की रचना सुनिश्चित नहीं है। यह या तो जल में तैरता हुआ घोंसला होता है जो कि मोथा तथा घास का बनाया जाता है अथवा यह मोथा और सरहरी को इकट्ठा करके किसी छोटे द्वीप पर अथवा जल में घनी उगी हुई घास अथवा धान में फंसाकर बनाया जाता है। घोंसला इतना बड़ा होता है कि उसमें केवल अण्डे ही आ सकते हैं। साधारणतया मादा एक बार में चार अण्डे देती है जो पिरीफार्म होते हैं और घोंसले में इस प्रकार रखे रहते हैं कि सबके छोटे सिरे केन्द्र की ओर रहें। पिरीफार्म के अर्थ हैं एक सिरे पर चौड़ा तथा विषमकोणीय और दूसरे सिरे पर एकदम नुकीला

कि जब इस प्रकार अण्डे घोंसले में नुकीले सिरों को केन्द्र की ओर करके रखे जायें तो वे न्यूनतम स्थान में आ जायें और पक्षी उनको आसानी से से सके ।

इस प्रकार पक्षियों में बहुपतित्व का प्रचलन एक प्राकृतिक आश्चर्य है । यह प्रकृति द्वारा प्रदत्त असाधारण तथा अलौकिक बातों में से एक है । पक्षियों में बहुपतित्व के कारण क्या है—यह स्पष्ट नहीं है । केवल राजचहा (*Rostratula benghalensis*) के विषय में कहा जा सकता है कि इस प्रजाति में मादाओं की संख्या नरों की अपेक्षा कम है और यह तथ्य कुछ हद तक इस प्रजाति में बहुपतित्व के लिए ज़िम्मेदार प्रतीत होता है । यदि इसकी तुलना मानव जाति में प्रचलित बहुपतित्व से करें तो विदित होता है कि राजचहा की मादा प्रणय तथा वैवाहिक सम्बन्धों में सक्रिय भाग लेती है और नर पक्षी को फुसलाती और रिझाती है । उसको प्राप्त करने के लिए अन्य समलिंगी प्रतिद्वन्द्वियों से युद्ध करती है, अत्यन्त परिश्रम से कामुक प्रदर्शन करती है और प्रणय करती है परन्तु मानव जाति में ऐसा नहीं है, किन्तु इसके विपरीत है ।

राजेन्द्रबहादुर सक्सेना,
सहायक अरण्यपाल ।

ERRATA OF ARTICLE

‘पक्षियों की पुकारें और मानव की व्याख्या’

Published in Cheetal October 1964, Vol. 7., No. 1., pp. 68-73.

<i>Page</i>	<i>Line</i>	<i>Instead of</i>	<i>Read</i>
69	4	Pava	Pavo
	8	Francocinus	Francolinus
	17	Caturnix caturnix	Coturnix coturnix
	20	Wit-me-lips	Wet-mi-lips
	22	Cuculus policephalus	Cuculus poliocephalus
70	7	Orange-pekeo	Orange pekoe
	7	Kithh-toppan	Kithe-toppan
	17	Pittodae	Pittidae
	20	mee-oh	mee-ou
	20	phillo	pyillo
71	24	कीक-कीक-कीक,	कीक-कीक-कीक,
		कीक-कीक-कीक	कोक-कोक-कोक
	27	दि कोकका	दि कोकला
	28	spenurus	sphenurus
	31	Delete I between है and श्वेतकपोली	
72	3	levcogenys	leucogenys
	9	फाज़ता	फाहता
	14	Orthomus	Orthotomus
	22	कृशकट्	कृशकट्
	28	cea	cae
73	4	haw-how-how-ha	haw-haw-haw-ha

FORM IV

(See Rule 8)

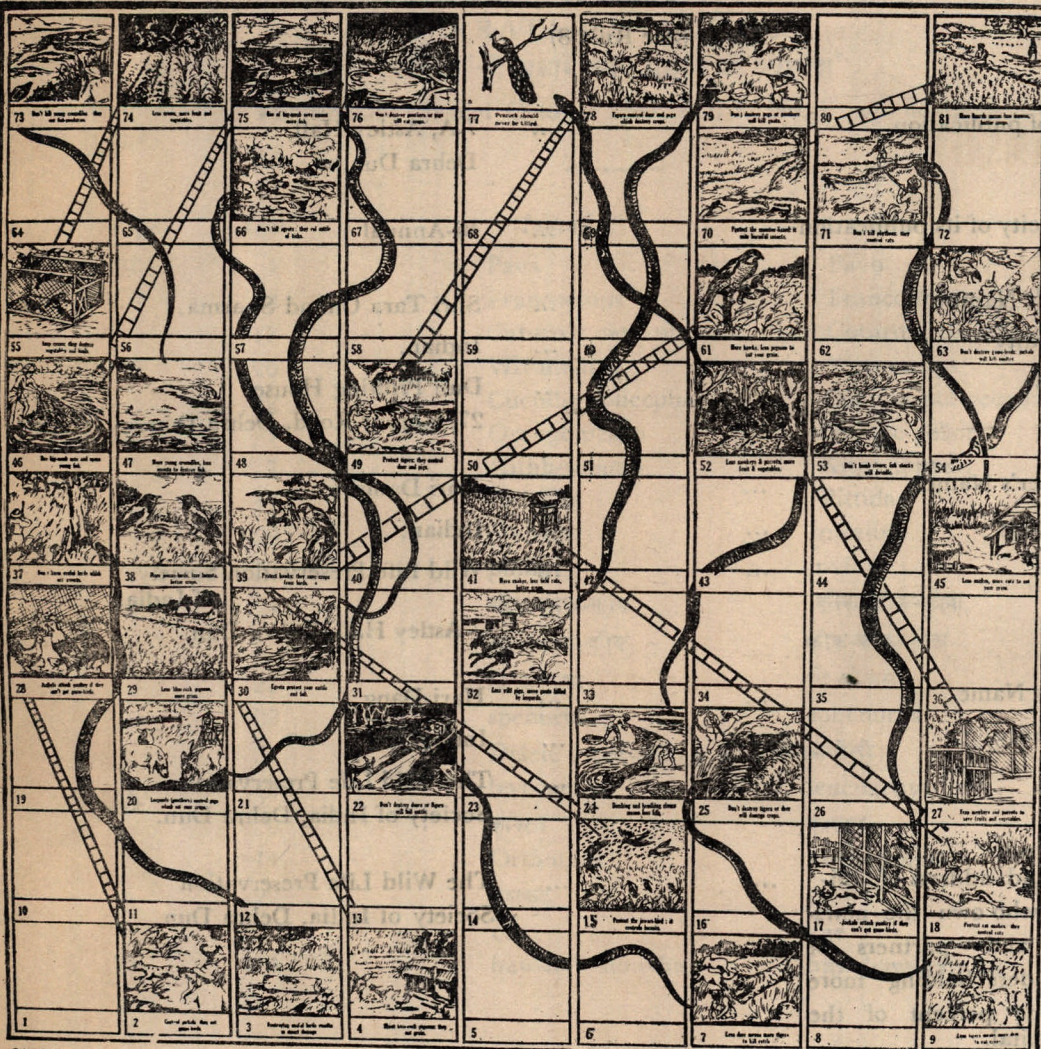
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I, Hari Dang hereby declare that the particulars given above are true to the best of my knowledge and belief.

Dated : 6th Nov. 1963.

Sd. Hari Dang
Publisher.

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